The Chemical Age

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Markets for British Chemicals

IN this issue, attention is once more directed to the export aspect of the British chemical industry and to the great markets which the British overseas Colonies and Dominions offer. Our specially prepared survey of British Empire trade, with its interesting charts, indicates that British chemicals already occupy a strong position in most quarters. Much has been done in recent years by the excellent exhibitions at Wembley and at successive British Industries Fairs to demonstrate that Great Britain is no longer merely a distributing nation, but holds a foremost place in manufacture. Concurrently, there has been a marked advance in our reputation for good quality. Already predominant in the heavy chemical industry, we need no longer fear comparison with the best in the standards of our dyestuffs, fine chemicals, chemical glassware, and other products. Chemical engineering shows a most promising advance, and the soundness and wearing properties of British plant are recognised throughout the world. From the production and manufacturing side, progress in recent years has been consistent and rapid.

It is gratifying to hear on all sides accounts of quickened interest in salesmanship, publicity, handling, transport, and foreign market exploration. These aspects have received, perhaps, rather less attention than they deserved in the past, and trade overseas which we might have got has sometimes gone instead to foreign competitors—the United States and Germany in particular—not because their products were better, but because they were supported by more attractive and energetic business propaganda. These defects in our methods, as the result of criticism and discussion, are gradually being repaired, and chemical industry generally is better organised for business to-day than ever before in its history. Our colonial markets offer ever widening scope for exploration, and in addition, there are opportunities of great promise in the Eastern nations of Europe, the Far East, and the great countries of South America. For these markets, competition is naturally keen, and to meet it we need not only good production, but equally good publicity, salesmanship, and distribution. With attention to all these necessary conditions, there is a growing future for the British chemical industry. The stabilisation of world conditions is what is primarily wanted to give our manufacturers and merchants their chance.

Corrosion in Centrifugals

THE importance that manufacturers of sulphate of ammonia are now attaching to the question of neutrality and physical condition is strikingly emphasised by the attention the matter is receiving at the meetings of societies and in the technical Press. The synthetic producers are, happily for themselves, in the position of having straightforward raw materials to work with, and they are, therefore, free from the tribulations of those who have to work with by-product ammonia and some of the unwanted constituents. When official gatherings of those representing the coal carbonisation industries get together, some topic or other relating to sulphate of ammonia seems always sure of a place in the programme, and it is to the credit of those who have been studying the matter that they nearly always have some novel fact to disclose or some new point of view to suggest. The latest contribution to the subject is the admirably practical paper which Mr. C. Bateman contributed a fortnight ago to a meeting of gas engineers in Wales. In discussing the various processes introduced in the past few years for effecting neutrality, Mr. Bateman was able to speak of the experience he had gained from close practical trials. His conclusions, therefore, are all the more valuable as representing facts derived from works experience.

There are probably still a number of works where ammonia solution is used as the neutralising agent, and it is as well that they should fully appreciate the disadvantages of this method to which Mr. Bateman draws attention. The principal drawback lies in the corrosive action of ammonia on the copper baskets, linings, and spindles of the centrifugals, the damage being caused by the formation of a double ammonium salt, ammonio-cupric sulphate. This corrosion, as a matter of fact, does not prove antagonistic to the best working conditions, but the cost sheets prove that any lengthy application of the method is undoubtedly disadvantageous. When it is considered that the average life of a copper gauze lining is three weeks to one month, a basket four to six months, and a spindle twelve to eighteen months, it will be seen that the expenses of these renewals make this method prohibitive. During the period of neutralising with ammonia solution, a basket of rustless steel was experimented with, but with still further unsatisfactory results. The second disadvantage is the formation of rock salt, which probably is due to running back the ammonia solution into the saturator. Such a practice has two effects on the contents of the saturator —first, causing a sudden drop in temperature; second, causing local alkalinity or super-saturation. The combination of these two effects, or defects, undoubtedly produces deposits of rock salt, which builds up with the period of working the plant. The average period of working the saturator under these conditions was two or three weeks, when the plant had to be shut down to remove this rock salt.

United Alkali New Enterprise

A STATEMENT of exceptional interest to the chemical industry was made by Sir Max Muspratt in his address from the chair at the annual meeting of the United Alkali Co. on Wednesday. He announced that the company intended to install a new plant, to be operated on the basis of the Casale process, for the production of synthetic ammonia for the company's own use. To those who have closely followed developments, the new enterprise, interesting as it promises to be, will cause no profound surprise. Nearly three years ago, on the occasion of the annual meeting of the Society of Chemical Industry in Liverpool, the members who visited the company's great works at Widnes were permitted to inspect a plant which had recently been installed for the oxidation of ammonia to nitric acid by passing it over platinum gauze. Even then the plant was producing nitric acid from by-product ammonia on a commercial scale. It was so designed that it could be rapidly duplicated in case of need, and was welcomed as a further step towards ensuring the independence of this country of imported supplies of nitrate in case of emergency. By producing their own ammonia by a synthetic process, the company will not only be able to control their own supply, but to ensure its freedom from impurity.

The adoption of the Casale process is another interesting feature of the enterprise. Up to now, the only plant in this country for the extraction of nitrogen from the air is at Billingham, and is a modification or improvement of the Haber process. It may be remembered that when Dr. Casale visited London some time ago, Dr. G. C. Clayton, M.P., a director of the United Alkali Co., was one of those who met him, and, in some observations on the subject of the visit, he indicated two aspects of the Casale process that promised certain advantages. The first was that it was essentially a small unit process; the second, arising out of the first, was that its distribution over a number of centres rendered it less vulnerable to attack from the air than one immense plant situated near the coast. These considerations appear to have been kept in mind in planning the new enterprise. Although the intention appears to be the production of synthetic ammonia for the internal business of the company, the new plant may conceivably prove a starting point for further developments. The production of nitric acid is not necessarily the final object. It may, of course, be treated as an end product, or it may be manufactured with a view to the further production of dyestuff intermediates, explosives, ammonium nitrate for fertiliser purposes, or other substances. These, however, are matters for the future. For the moment it is enough to welcome a new enterprise of considerable chemical interest, and to wish the company success in its continued policy of progress and expansion.

The Problem of Colour Fastness

MR. ERNEST HICKSON, at the annual dinner of the Society of Dyers and Colourists, made an important announcement on the subject of dye fastness in the course of a pointed reply to some recent criticism. The number of really fast colours available to users to-day, he pointed out, is greater than ever before, and an effort is to be made internationally to secure further improvement. The Society has recently been considering reports from three commissions—from the textile chemists of Germany, from the American Association of Textile Chemists, and from the British Wool Research Association. The view of the Society that tests of an international character should be set up by international agreement has been accepted by the German and American authorities, and the Society has appointed a committee to take further steps. The same point is also emphasised by Mr. Alan Crummett, of the British Silk Association, who points out the inconvenience caused by the non-uniformity of present methods and the great advantage of international standards for the testing of fastness to light, water, washing, degumming, etc. The promised co-operation between the principal three nations on this important subject is to be welcomed from every point of view.

On the general dyestuff situation two incidents of some interest may be noted. The first is the formal approval by the Chancery Court of the scheme for the reduction of the capital of the British Dyestuffs Corporation. Mr. Justice Eve, who heard the application, made some rather caustic comments on the policy of investing Government funds in business concerns. Many who dislike Government participation of any kind will no doubt endorse his lordship's *obiter dicta*; but, after all, questions of Government policy are matters for Parliament to settle, and the Government of the day, however their action may now appear in the

light of experience, were satisfying a very urgent public demand when they decided to help to finance the establishment of a national dyestuffs industry. Moreover, no one urged upon them the argument of "national necessity" more forcefully than the late Lord Justice Moulton. The second matter of note is the spirited address on "The Dyestuff Industry and the State" which Dr. Levinstein delivered in London on Wednesday evening, an abstract of which appears in this issue.

"Flowers of Sulphur"

THE London Chamber of Commerce has issued an interesting explanatory statement regarding the recent prosecution under the Merchandise Marks Act, 1887, relative to the trade use of the description "Flowers of Sulphur." Originally, it is pointed out, the term was unquestionably applied to sublimed sulphur. Some years ago it was found possible to produce, by other processes, a sulphur composed of particles of a purity and fineness equal to sublimed sulphur. The new product, for this reason, was sold by some manufacturers and merchants as "Flowers of Sulphur." On the question whether the expression "Flowers" implied the product of sublimation or highly refined sulphur of a similar fineness of particle, there was considerable difference of opinion in the trade. So far as the largest market for finely divided sulphur—the rubber industry—was concerned, the point was of no importance. In the hopfields, however, sublimed sulphur had been in general use as a specific against the disease known as hop "mould." In these circumstances, the London Chamber of Commerce was urged to take legal action in order that the precise meaning of the trade term "Flowers of Sulphur" might be finally settled by the Courts. The jury found that "Flowers" could only be applied to sublimed sulphur.

The Chamber is now anxious to make it clear that this result does not imply any reflection upon those manufacturers and merchants who have been in the habit, for years past, of applying the word "Flowers" to a sulphur that was not, in fact, sublimed. It desires, therefore, to state categorically that, while the trade was divided in opinion, all parties acted in good faith. The attitude of the Chamber in the matter having been explained, the trade interests concerned have abandoned their intention to proceed with the appeal that had been lodged. In these circumstances the Chamber of Commerce is meeting the defence in the matter of costs.

Specifications for Paint Materials

THE British Engineering Standards Association, we learn, has just issued British standard specifications for genuine dry white lead and genuine white lead oil paste for use in paint manufacture. These contain clauses regulating the composition together with standard reception tests for the purchase of genuine white lead in dry and paste form respectively, and appendices giving methods of carrying out the tests. The specifications have been prepared at the request of the paint manufacturers by a committee representative of both the buying and manufacturing interests, and are the first to be published of a series of specifications for paints, varnishes and paint materials. As in the case of all British standard specifications, they will be reviewed as experience of their working or progress of the industry renders it necessary, and revised issues will be published from time to time.

Other specifications in hand, which will be published as they are completed, include the following:—(1) *Painting materials*: Raw, boiled and refined linseed oil, turpentine, white spirit, red lead, zinc oxide, zinc oxide oil paste, barytes, asbestine, red oxides of iron, lead chromes and Prussian blues. *Ready-mixed linseed oil paints*: White lead, tinted white lead, zinc oxide, tinted zinc oxide, black, green and red oxide of iron. *Oil varnishes*: Interior, exterior, rubbing and extra hard drying. Copies of the new specifications (Nos. 239 and 241, 1926) may be obtained from the Association's Publication Department, 28, Victoria Street, London.

Books Received

THE CHEMISTS' YEAR BOOK, 1926. Edited by F. W. Atack Manchester: Sherratt and Hughes. Pp. 1,180. 21s.

THE CHEMICAL ENGINEERING LIBRARY—CENTRIFUGAL DRYERS AND SEPARATORS. By E. A. Alliott. Pp. 151. 6s.

MODERN DRYING MACHINERY. H. B. Cronshaw. Pp. 160. 6s. London: Ernest Benn, Ltd.

DYEING WITH COAL-TAR DYESTUFFS. By C. M. Whittaker. London: Baillière, Tindall and Cox. Pp. 248. 10s. 6d.

INDUSTRIAL CHEMISTRY. 2 vols.—Inorganic and Organic. Edited by Allen Rogers. London, Bombay, Sydney: Constable and Co., Ltd. Pp. 1,268. 52s. 6d.

THE STATES OF AGGREGATION. By Gustav Tammann. Translated by Robert Franklin Mehl. London, Bombay, Sydney: Constable and Co., Ltd. Pp. 298. 24s.

CHEMICAL ENGINEERING AND CHEMICAL CATALOGUE. Edited by D. M. Newitt. London: Leonard Hill. Pp. 360. 15s.

DIRECTORY OF PAPER MAKERS OF THE UNITED KINGDOM FOR 1926. London: Marchant Singer and Co. Pp. 272. 5s. 6d.

The Calendar

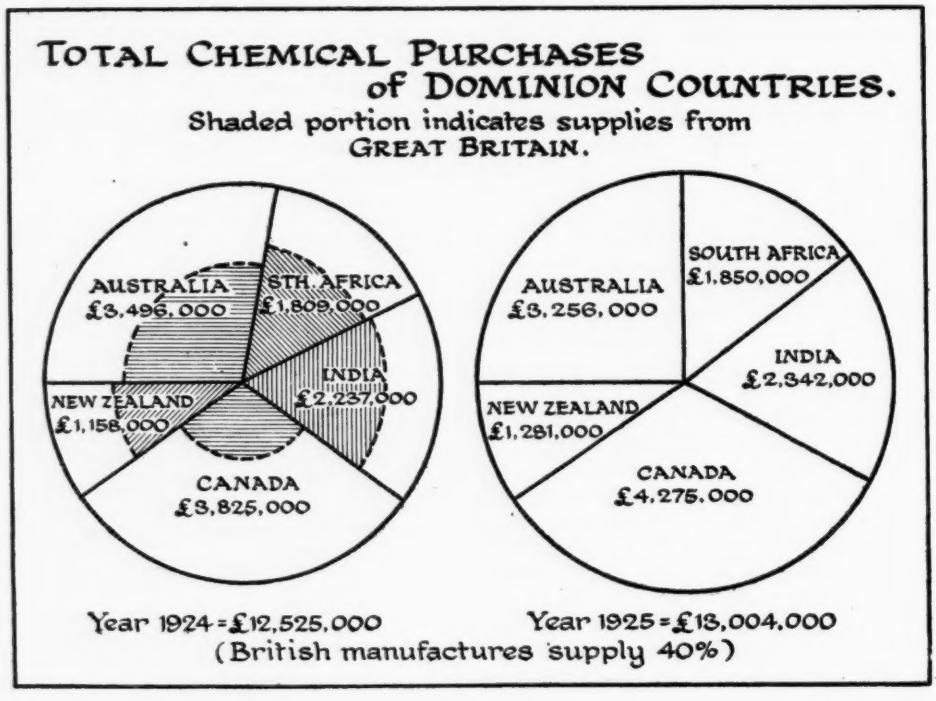
Mar. 29	Society of Chemical Industry (London Section): "Surface Combustion." Major T. G. Tulloch. 8 p.m.	Burlington House, Piccadilly, London
30	Hull Chemical and Engineering Society: "Utilisation of Waste Chemical Products." T. Andrews. 7.45 p.m.	Grey Street, Park Street, Hull
31	Institute of Chemistry (Belfast Section): Discussion on "Chemical Education." 7.30 p.m.	Queen's University, Belfast
Apr. 2	Society of Chemical Industry (Glasgow Section): Annual Business Meeting. Joint Smoker with the Institute of Chemistry	Ferguson and Forrester's Restaurant, Glasgow
6	Hull Chemical and Engineering Society: Annual Meeting. 7.45 p.m.	Grey Street, Park Street, Hull
6	Institute of Metals (Birmingham Section): Annual General Meeting. 7 p.m.	Chamber of Commerce, New Street, Birmingham
7	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London
8	Oil and Colour Chemists' Association: "The Optical Properties of Linseed Oil and the technique of Van Eyck and his followers." A. P. Laurie	8, St. Martin's Place, Trafalgar Square, London, W.C.2.
9	Institute of Metals (Sheffield Section): "Bronze." R. T. Rolfe. 7.30 p.m.	The University, St. George's Square, Sheffield
9	Society of Chemical Industry (Manchester Section): "The Constitution of Coal." R. V. Wheeler. 7 p.m.	16, St. Mary's Parsonage, Manchester
12	Royal Institution: General Meeting. 5 p.m.	21, Albemarle Street, London, W.1.
12–17	Optical Convention	Imperial College of Science and Technology, South Kensington, London

Chemical Markets of the British Empire

Strength of Our Position

The following notes on the chemical markets of the British Empire and the strength of the British position in them have been specially prepared for THE CHEMICAL AGE *by our Statistical Department.*

THE British Empire provides some of our best overseas markets. British chemicals are now exported annually to the value of over £22,000,000, and of this large total nearly one-half is taken by the Dominions and other countries within the Empire. The purchases of India and the four Dominions alone constitute a value in excess of £5,000,000 per annum, or approximately 25 per cent. of the whole of British export trade. This is a level which statistics from home sources and also those from the countries concerned indicate are now being constantly maintained year by year and which serves to illustrate how rapidly these particular markets have recovered from the depression that has touched almost every country.



At present most profitable to our export trade, the countries of the Empire offer a field for increasing enterprise and provide a compensatory balance for the more tardy purchasing elsewhere. Their individual importance in relation to chemical products is obviously of importance in view of their varying requirements, and some conception of these may be obtained from the recently issued official analysis of British chemical markets overseas for the year 1924.

Normally India is responsible for the largest purchases from this country, but in that year a slight set-back in this market had the effect of placing Australia in the leading position. These markets were then followed in order of buying importance by South Africa, New Zealand, and Canada.

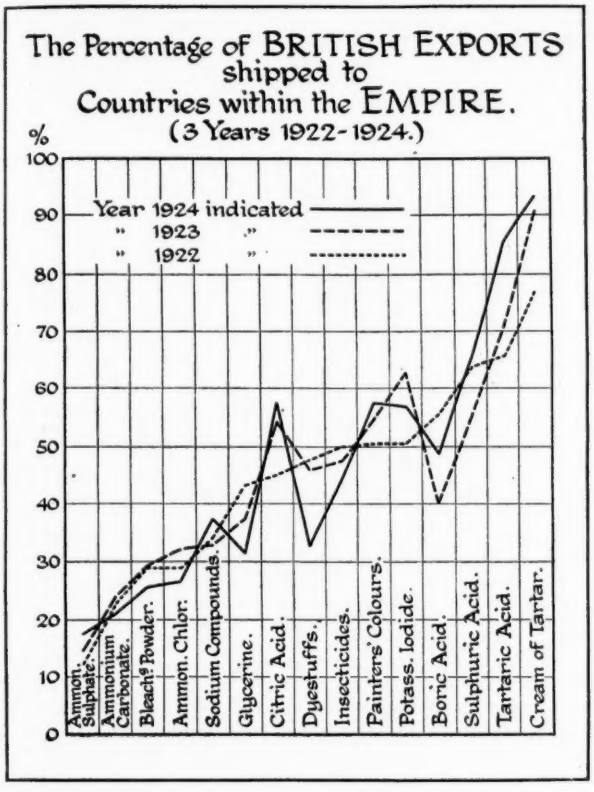
Canada

Canada is thus our smallest Dominion customer, but when judged on the basis of total capacity for chemicals might well be our best, as it takes easily the largest total of imports, and is, moreover, adding to its importance. Here, however, we are experiencing a keener competition than in any of the other Dominions, and that quite naturally on account of the proximity of rival supplies in the United States. Nevertheless, in spite of the disadvantage of distance, British chemicals to the value of £557,000 were shipped to this market in the year 1924, and this was a figure higher than in the previous twelve months by £43,000.

Analysing this total under broad headings, a falling-off was shown over these periods in British shipments of painters' colours and materials by about 8 per cent., and since dyestuffs' business in this direction was relatively unimportant the trade in other products rose by £50,000, or 12 per cent., to a total of £466,000, of which the outstanding items were £149,000 for sodium compounds and £96,000 for heavy coal tar oils.

Valuable as are these totals, their true significance in this market is small in relation to the total import trade, as Canadian requirements in 1924 approached £4,000,000, whilst the preliminary total for 1925 puts the capacity as being even in excess of this. Business here is, therefore, worthy of close consideration.

Dealing first of all with acids, of which Canada imported altogether more than £100,000 worth in 1924, the predominant demand was for tartaric, citric, and boric. Supplies of the first-named came from a number of sources, about one-sixth of the total being imported from Great Britain, our trade thus amounting to £4,800, and being exceeded by United States supplies approximating to £10,000 and those from Italy valued at £6,000. Boric acid entering the Dominion was still more in the hands of American suppliers, whose trade was equivalent to £9,000 out of the total of £9,200.



In citric acid, however, the British position was much more substantial. Canada takes the larger part of its needs in this respect from Great Britain, and this fact is reflected in the Dominion's position as our second best Empire market. Total imports in 1924 amounted to £19,000 and £9,000 of this represented British citric, £6,500 came from Italy, and a smaller quantity from the Netherlands. It is encouraging to note that in 1925 the total Canadian citric imports were increased by 50 per cent. and that at the same time the British supplies doubled, so that we are now getting an even greater share of the market.

Another increasing demand which is being shared by British manufacturers is that for alum cake, and here the scope for development is wide. The Canadian market absorbs annually about 15,000 tons of this product, and the bulk is taken from the United States, but British supplies in the most recent year were valued at £8,700 and form a quite useful basis for improvement. Moreover, it is noteworthy that as much as one-third of the total requirements of alum was shipped from this country.

Among the ammonia compounds British manufacturers effect the largest business with the Dominion in sal ammoniac and our supplies of this product were equal to those of all competitors, whilst the sulphate demands, which are relatively unimportant, accrued mainly to the United States, and the very important nitrate business was almost entirely met by Germany. A still more prominent trade was taken by us in sodium compounds, British shipments averaging £150,000 per annum, and although in comparison with our sales to other Dominions this is low, nevertheless Canada is our second largest Empire market for cyanide and takes more than 90 per cent. of total requirements in this respect from Great Britain. Other sodium salts in which we get important proportions of the full requirements are the sulphate and sulphide.

Canada is again a relatively small market in demands for paints, pigments and varnishes. Taken altogether, we supply nearly 25 per cent. of all the imports, but in certain of these lines a much larger percentage comes to British manufacturers. Litharge imports, for example, average annually £18,000, and our shipments are fully half of this figure. Blanc fixe imports were in 1924 some £6,000 and 40 per cent. came from Great Britain. Lead reached £9,000, and our shipments were valued at nearly 90 per cent. of this, but it is in prepared paints and varnishes that the business goes to American competitors.

New Zealand

A much more satisfactory market on present showing is New Zealand, for whereas in the case of Canada our total chemical shipments amount to only 13 per cent. of the market capacity, New Zealand buys more than half her needs from Great Britain, and although a smaller area actually presents a more valuable business to British manufacturers. This is, of course, in accordance with the general attitude of the latter Dominion, where buyers of almost all products incline strongly to the home country for their requirements. The net result is that in such a section as paints and colours, New Zealand buys from us three times as much as Canada and nearly as much as South Africa, and in insecticides and some acids is also our second best Dominion customer.

Demands for caustic soda, again, show clearly the strength of British supplies as opposed to those of competitors, since of the total imports into the country, which are worth annually £30,000 to £35,000, more than 95 per cent. are received from Great Britain. Acid imports disclose a total import trade of very similar value, and the British share of the market is also larger than that of all rival suppliers, whilst other of our products enjoying similar good positions include cream of tartar, of which shipments from the home country amount to £38,000, or approximately 75 per cent. of New Zealand's total, and insecticides at £112,000, which gives us a proportion of 85 per cent.

Undoubtedly the largest individual section of business is that of paints, colours and varnishes, since of the New Zealand purchases in 1924 of £380,000 so high an amount as £232,000 represented supplies from British manufacturers.

Australia

Larger scale demands are to be expected from Australia and this is, in fact, our largest Dominion market for paint. During the twelve months ending with June 30 last the Australian imports in this respect stood at £660,000, and of this total no less than £471,000 worth was British production. Included in the total taken from this country was £57,000 worth of prepared paints and enamel, £42,000 of paint ground in oil or water, and £70,000 worth of white lead. Another class of good business in which we met the bulk of Commonwealth requirements was that of cream of tartar. The demand for this product was of such important dimensions as to take up, together with New Zealand's purchases, practically the whole of British export trade to all parts. Large shipments were also taken from Great Britain of sodium carbonate and caustic soda, and here again home manufacturers had the bulk of the available business.

South Africa

South Africa is also a field where British manufacturers hold a first-rate position and an excellent jumping-off situation for future developments. Among the very valuable demands for products which come almost exclusively to Great Britain may be numbered sheep dips, valued annually at £38,000, arsenate of soda at £47,000, distilled glycerine worth £187,000, caustic soda to the value of £73,000 and also £289,000 of sodium cyanide with £21,000 of potassium cyanide.

South Africa is also a prominent market among the Dominion countries for ochre and various coal-tar pro-

ducts, whilst in demands for insecticides with disinfectants and also glycerine this area is quite supreme.

Dominion markets are, of course, expanding rapidly, and whether having an industrial or agricultural bent in their aspirations must inevitably reflect increasing demands for chemicals. That in the majority the position of British chemicals is at present well established should induce no false sense of security but rather provide an impetus towards gaining the major portion of expansion ahead of competitors.

Methods of Packing Chemicals for Export

How Principal Types are Handled

The safe packing of chemicals is essential to a successful export trade, and the following details of methods and precautions adopted by leading exporters in the various branches of the industry are of value to all concerned with packing and transport methods.

WHILE the packing and transport of chemicals has long been the subject of strict regulations on the part of municipal, shipping, and rail authorities, modern methods and cumulative satisfactory experience are tending to make the way slightly easier for the exporter, although merchants and producers still claim that many restrictions are unnecessary and a definite impediment to trade.

There has been little development recently in actual packing and containers, save modifications and alterations of standard containers, as suggested by the experience of individual shippers. There is, however, a definite tendency to exploit the possibilities of metal in preference to wood in some cases, and aluminium is a metal that already shows signs of being one of the metals of the future so far as chemical containers are concerned.

Transporting Acids

Shipping Restrictions

The principal mineral acids are the subject of strict regulations. Strong sulphuric, including oleum, is usually exported in iron drums. At present the Board of Trade allows 1 and 2½ cwt. net. drums, and is considering the question of 3 cwt. drums, which size would be permitted by shipping companies. Some firms would like to export sulphuric acid in 10 cwt. drums as offering the maximum weight with the minimum of tare, but the authorities object to this large size because of the difficulty of throwing such a weight overboard in case of accident. Firms use various drums, and at least one great exporting concern uses nothing but drums tested to no less than 40 lb. per square inch. When exporting in such drums no other packing is required, but when packed in earthenware jars of 2½ galls. each, cases may be used and the jars surrounded with whiting or a mixture of whiting and sawdust according to requirements. The whiting is intended to neutralise the acid in the event of fault, and while it has frequently been suggested that its use might give rise to the production of CO_2 gas on leakage, many large exporting firms have never experienced this.

The whiting for a large load of, say, 3,000 to 4,000 cases will run into some twenty tons. This is not wasted when the acid is unshipped. If the consignment is going to mineral water manufacturers they will probably purchase it for use in the manufacture of CO_2. Otherwise it finds a ready sale in the open market, and although whiting prices have increased considerably of late, exporters generally count on making this part of their packing pay for itself. Hydrochloric acid, commercial (muriatic), travels in carboys or jars. Many shipping companies will not accept the former containers, but from the merchant's point of view they are an economical packing, but as they are charged by measurement the bulky nature increases the freight very considerably. Chemically pure acids—sulphuric, nitric, and hydrochloric—are exported in Winchester quarts. Nitric up to 1·420 gravity must go in jars, and this packing is used for sulphuric acid for all electrical purposes.

In large consignments sulphuric acid can be packed under deck in the hold, but this necessitates a load of perhaps 150 to 200 tons. In such cases whiting is used for packing in the hold itself.

It is interesting to note that on the Continent exporters can ship in 10 cwt. drums, and carboys are generally allowed. It is from the Continent that just recently aluminium-lined drums have been imported, and they are, indeed, already in actual use for the transport of strong nitric acid. The use of aluminium is expected to be extended in chemical packing very considerably in the near future.

An interesting opinion has been given as regards the utilisation of Chilean nitrate as a raw material for the manufacture of nitric acid. In some quarters it is considered that nitrate has to all intents and purposes been superseded, for manufacturers of dyes and other large users of nitric acid have already found it more economical to import the concentrated synthetic acid from Germany, and it is understood that special vessels constructed for this trade with aluminium tanks have been regularly employed for the past year or more.

Fine chemicals are also packed in paper-lined bags, cases, and casks. Expensive colours such as vermilion are exported in chamois leather bags holding from 60 to 70 lb. each, and these are packed in cases. Mercury is safe in iron bottles.

There is a general feeling among merchants that more might be done to encourage export trade. They complain that in many cases freight rates fixed by the shipping conference for this country are considerably higher than equivalent rates from countries abroad. In some cases it is actually cheaper to ship, say, to Antwerp and from there to the destination, rather than direct from this country. Some complain that a rate of 120s.—which at present obtains for Australia and India—is exorbitant, particularly in the case of acids, where half the gross weight is packing.

Another complaint is against the primage system. By this means the exporter pays his freightage, plus 10 per cent. primage which is returned to him in six months, provided he does not ship with any company outside the conference within that period. Thus, the shipping company may hold several hundred pounds free of interest for six months. The merchant could get outside firms, or charter a ship, to take his goods, but the saving would be counteracted by the loss of primage which always stands at a considerable amount. There is strong advocacy for a net rate only to be quoted by all shippers, and for this system to be enforced by law.

Gas Works By-Products

Methods of Handling the Tar Group

Gasworks at this season are anticipating the annual boom in road-making, and are preparing for extensive outputs of road tar, pitch, and similar products.

Coal tar and crude tar are comparatively simple propositions. The coal tar is carried in 40 gall. oak barrels from the works, and may travel on lorry or train or barge according to destination. Alternatively, it may be sent in rail tanks of 14 ton or 2,500 gallon capacity, according to railway specification.

The latest development in road tar transport is to send it out hot from the works, at about 120° to 150° F., in road tanks. These are conveyed straight to the road boilers where repairs are in hand and the tar transferred at once. It loses only a few degrees in transit and thus saves time and firing expenses to the user.

Crude tar is similarly packed, but pitch is frequently run into barrels, and when cool the staves are stripped off, leaving the well-known mould. It is also shipped in lump if users so desire, but the moulds are found to be much easier for rolling from place to place, and they generally facilitate handling.

Tar oils need good quality oak barrels for road or rail. Tanks are used for large quantities. Most oils, particularly those for creosoting, are very mobile and tend to saturate the barrel. The wood will frequently become logged in one journey if left standing before use. Old linseed and rosin oil

barrels particularly are suitable for tar loads. Tar oils in bulk go by tank steamer and a petroleum boat will frequently take a return load.

Anthracene is exported in 40 gall. casks of oak, or in chestnut wine pipes (120 gall.) or tallow pipes. The "pipes" closely

A Venesta Barrel.

resemble large barrels, and after use with tallow are still suitable for anthracene. It is also packed in bags for shipping but not for rail. Naphthalene goes in double bags of manilla.

Drums and casks are suitable for carbolic acid, also hard wood oil or extract barrels. Benzol is subject to numerous restrictions in transport. It must be packed in stout metal drums, securely fastened, and labelled "Inflammable." Petrol Act and L.C.C. regulations apply to benzol and allied products (see Abstracts printed elsewhere in this issue). Road tanks for its transport hold 500 gall. and last year a new rule made all-metal framework compulsory. There is, however, a time limit within which wooden-framed tank wagons must be replaced. All firms manufacturing road tanks supply models conforming to existing regulations.

Pyridine is carried in galvanised drums of 90 gall. First-class second-hand drums after use for acetone are often utilised. Creosote and similar liquid products are either pumped into a tanker berthed alongside, or, where this is impossible, are fed into tank barges which transfer it to the tanker.

The handling of pitch at large works involves complicated appliances. In some the pitch bays are all tracked and locomotives run to quayside or rail track. In others, a great running crane may be tracked across the top of the consecutive bays.

Handling Sulphate of Ammonia

Mechanical Conveyors

The handling of sulphate of ammonia in large quantities is to-day effected by the use of numerous mechanical conveyors.

The sulphate in a large works is probably carried to the stores on running band conveyors which enter at a convenient height for personal handling and transference to the central dump in the store. The rooms are artificially heated to keep the sulphate in the best possible condition. As required it is carried by barrow to the automatic elevator situated within a few feet of the heap and at the side of the store. There the sulphate is taken to a height of some 20 or 30 feet, whence it passes through a hexagonal reel and falls a considerable distance over a wire screen that acts on the sieve principle and ensures that the material is in first-class condition for packing. At the end of the fall, the stream of sulphate is directed towards and concentrated in a cone-shaped nozzle for filling purposes. Underneath this cone-shaped mouthpiece is a filling and weighing apparatus, the operations being carried out by hand.

The bags are placed under the nozzle and the flow can be regulated by a hand slide operated by the filler. As the bag tips the dead-weight scale supply is cut off and the bag moved to the automatic stitching machine close at hand. This machine gives a running chain stitch across the mouth of the bag. By this means, when the sulphate is required, one stitch only need be severed and the whole stitching can be removed at one pull. The bag also is undamaged by this method. Details of the method by which the stitching can be released are included with each consignment of sulphate.

The bags themselves weigh 2½ lb., hold 2 cwt. each, and are of Calcutta twill. The seams are also safety stitched to obviate possible leakage of the neutral dry sulphate. In certain export cases it has been found necessary to provide additional protection in the form of double bags. In others, a larger outside bag encloses a paper lining in the form of a bag. This inner bag is composed of two layers of stout Kraft paper specially treated. This inner layer has been the subject of considerable research by firms who are out to find a packing that will not only stand rough usage but will offer the necessary resiliency and opposition to damp.

Through the centre of a large sulphate shed may be found an automatic slat conveyor, probably set on floor level. This may be reversible in action and will convey bags either to quay or rail platform as desired. At the end are two automatic counting controls that clock the number of bags passing and act as an additional check upon each other. At the quay the bags may be loaded direct into barges or other vessels, and at the rail end they are trolleyed to the waiting trucks. The largest firms invariably find that rubber-tyred trucks and trolleys are by far the most economical and save noise and floor wear. The waiting trucks are often sprinkled with sawdust and the complete load of sacks is double sheeted with tarpaulins.

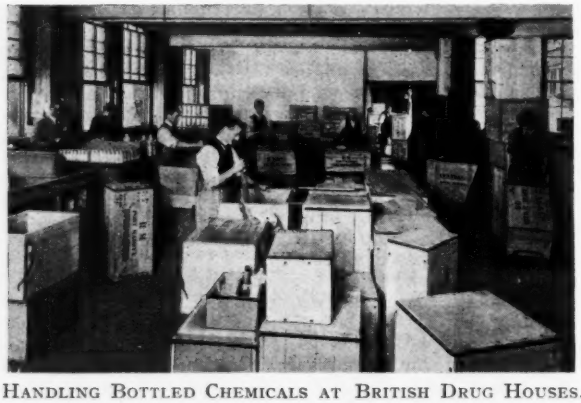
It is possible with efficient organisation to bag some 300 tons a day and to pack wagons and sheet them at the rate of about 30 tons an hour.

German Potash Bags. The Chain Stitch is also found on British Sulphate of Ammonia Bags.

Fine Chemicals

Difficulties of Temperature

In the packing of fine chemicals for abroad no hard and fast rules can be laid down. The secret of successful exporting is to suit each packing to the particular consignment. The chief difficulty to be overcome is the wide range of temperatures experienced in transport to most export markets. In the tropics, for instance, the humid atmosphere may cause a



Handling Bottled Chemicals at British Drug Houses.

deliquescent chemical to liquefy when packed in a corked bottle, where such packing would be completely efficient for home trade. The "breathing" of the chemicals, as it has been termed, must be counteracted by special packing, and wax plays an important part. In the case of some packet goods there is a completely sealed cover of wax paper inside the case. For other goods special capsules may be used and in the case of small tins wax is run round the fluted rim, thus sealing the lid.

The cases are made to suit each individual consignment and may be tin lined, iron bound, or hermetically sealed as required. The packing in the case of acids is the normal whiting or whiting and sawdust, but for bottle goods, wood wool or straw may be employed. Kieselgühr is used as an absorbent packing with certain chemicals. It is essential that all substances employed shall be perfectly dry when used. Three-ply wood drums, iron drums, carboys and small casks such as are generally used in the chemical industry also do duty for export, where the contents are not particularly susceptible to climatic conditions.

Packing Methods in Favour Abroad

Advantages of Waterproof Bags

Some American shippers in the dry chemical industries have recently adopted a new method of packing and shipping in waterproof bags in place of boxes, barrels or drums, says *Drug and Chemical Markets*. According to some of the firms that have conducted comparative tests, the use of bags results in savings as high as 50 per cent., and in the elimination of certain practices that have long been borne as necessary evils. The new style container is a heavy jute bag, with two inside liners of heavy Kraft paper and a coating of asphalt cement between each layer, applied hot in order to make the whole fabric waterproof, siftproof, and airtight. This construction has been found to withstand the rigours of handling and shipping. The bags are closed at the top with a simple wire tie that is quickly fastened.

One of the most important advantages possessed by waterproof bags is their low initial cost. Less money is tied up in containers. There is a similar saving in tare weight that not only facilitates handling, but may result in a notable reduction in freight and haulage charges. Where storage space is at a premium a further argument in favour of bags is seen. They are shipped in compact bales, so that two hundred or even more "empties" occupy no more space than one empty barrel. While labour requirements and costs naturally vary, one man can do the work of two, and sometimes of three, in the various operations of filling, closing, stacking, loading or unloading where packing is done in convenient sized bags, the maker continues. The users of dry chemicals can open and close the bag at will, because of its wire fastening, without exposing the remaining contents to the danger of deterioration. From an advertising standpoint, the new waterproof container is effective. Being of textile construction, the producer's brand, name and address can be printed directly upon the bag in bright colours and attractive designs.

Packing Norway Saltpetre

Norway saltpetre, a granular mass of synthetic calcium-nitrate, the chief product of the Norwegian fixed nitrogen industry, is a very hygroscopic substance, the packing of which has naturally always offered some difficulties. Good wooden barrels are expensive, and bags of ordinary making are inefficient for this material. Now the problem seems to be solved by an invention worked out by the Norsk Hydro-Elektrisk Kvaelstofaktieselskap, consisting of a new type of impregnated bags which have been used for the major part of the company's production during the last few years and are said to have proved very satisfactory. The bags are made from a material consisting of an outer layer of jute fabric and an inner layer of a sort of durable crèpe paper between which layers a thin coat of some bituminous impregnating material is applied. A patent recently taken out by the company states that a suitable impregnating mass for this purpose can be produced by heating a mixture of unsaturated oils, sulphur, and asphaltic bitumen.

The Potash Importing Corporation of America are now advertising German potash in a new form of bag. The

Packing at British Drug Houses.

improvement lies in the adoption of the chain stitching across the mouth of the bag, whereby the bag may be opened at one pull after severing one stitch. The bag also is undamaged. (This principle has been adopted for some time in this country —see our notes on the handling of sulphate of ammonia.) One notices, however, that the bottom corners of these potash bags are stitched across some inches from the point and the contents are thus kept from contact with the floor along about half of the bottom seam.

Petroleum and Tar Products

Restrictions on Storage and Conveyance

We reproduce in abstract form the requirements of the Petroleum Act as administered in the City of London. The precautions will, in the main, naturally be applicable to any authority and represent the minimum precaution to be undertaken by producers and handlers of petroleum and tar products as outlined.

Petroleum to which the Acts apply means any rock oil, Rangoon oil, Burmah oil, oil made from petroleum, coal, schist, shale, peat, or other bituminous substance, and any products of petroleum or any of the above-mentioned oils, which give off an inflammable vapour at a temperature of less than 73° F. This includes benzine, benzol, benzoline, carburine, gasoline, motor spirit, naphtha, pentane, petrol; and these and similar substances are termed in this Abstract "Petroleum Spirit." The Acts also apply to any composition

or mixture which contains petroleum spirit. Such compositions are termed "Petroleum Mixtures," and include india-rubber solution, some varnishes and quick-drying paints, etc. The term "Petroleum" used includes both petroleum spirit and petroleum mixtures.

Where petroleum is kept at any place (except during the seven days next after importation) or conveyed, or sold or exposed for sale, the vessels shall be conspicuously labelled with the name and address of the owner, sender or vendor; and in the case of petroleum spirit with the words "highly inflammable"; in the case of petroleum mixtures of the words "Petroleum Mixture giving off an inflammable heavy vapour. Not to be exposed near a flame." Petroleum can only be kept as follows: In the case of petroleum mixtures, unsuitable to be measured by liquid measure, not exceeding thirty pounds, may be kept in separate sealed packages or vessels each containing not more than one pound. When it is kept or used for the purposes of light locomotives in accordance with the regulations as to petroleum made by the Secretary of State.

Conveyance Conditions

Every vehicle carrying petroleum and every vessel containing same shall be strongly constructed and in good condition; shall be fitted with adequate sides and the load protected from sparks, lighted matches, etc., by a cover of fire-resisting material; the vessels shall be of metal and securely closed; they shall not be packed so as to project beyond sides or back of the vehicle. No fire or artificial light capable of igniting inflammable vapour shall be carried, nor shall smoking be allowed, on the vehicle.

A supply of sand or other efficient means of extinguishing fire shall be in an accessible position on the vehicle.

The engine and fuel tank of a mechanically-driven vehicle must be effectively screened from the body of the vehicle by a fire-resisting shield carried up above the height of the load and down to within 12 inches of the ground, and the exhaust must be wholly in front of this shield; a quick-action cut-off valve must be fitted to the fuel feed pipe in an easily accessible position.

When a tank-wagon is being filled the engine shall not be run until all tanks are securely closed. All due precautions shall be taken.

These conditions do not apply to any vehicle other than a tank-wagon containing petroleum spirit, provided that the quantity of petroleum spirit carried on such vehicle does not exceed thirty gallons in tins each containing not more than two gallons or in drums each containing not more than ten gallons, or fifty gallons in a single steel barrel.

Specification for Tank-Wagons

The vehicle, including the tank and fittings, shall be strongly constructed of fire-resisting materials and in thoroughly good condition; and there shall be a clear space of not less than 6 inches between the tank and the fire-resisting screen. The quantity of petroleum carried shall not exceed 2,000 gallons, provided that if the capacity of the tank exceeds 1,200 gallons the weight of the engine and load shall be distributed over the three axles of a six-wheeled combination vehicle, and that the vehicle shall be constantly attended by not less than two competent persons. The tank shall be divided into self-contained compartments, each of which shall not contain more than 600 gallons, provided that this condition shall not apply for a period of five years from January 1, 1925, to tank-wagons of not exceeding 1,000 gallons capacity which were constructed before that date.

Then follow details of the actual construction of the tank, but all firms producing such wagons comply with the specifications in all respects.

Direct London-Karachi Shipments

Chemical Firms Seek Additional Facilities

STAFFORD ALLEN AND SONS, LTD., of Cowper Street, Finsbury, E.C.2, manufacturing chemists, have addressed under date of March 17, a letter to Spencer Chapman and Messel, A. Boake Roberts, F. W. Berk and Co., Stevenson and Howell, T. Morson and Son, C. J. Hewlett and Son, Howards and Sons, Ltd., May and Baker, Burgoyne, Burbidges and Co., British Drug Houses, W. J. Bush, Dakin Bros., Allen and Hanburys, in which they write:—

"Doubtless you are experiencing the same difficulty as we are in shipping deck cargo, mainly inflammable liquids, from London to Karachi, owing to the attitude adopted by the Bombay Port Trust. There is no doubt that London manufacturers are losing a considerable amount of trade to German competitors through not having a direct steamship service to Karachi, the usual method being via Bombay, and the extra freight and insurance charges that have to be added for shipment via Liverpool or Antwerp make c.i.f. prices prohibitive.

"We are taking the matter up with the P. and O. Shipping Co. May we suggest that you write a similar letter to the shipping company? We are also approaching the Overseas Department of the Board of Trade and the London Chamber of Commerce."

The letter to the P. and O. Shipping Co., a copy of which is enclosed, states:

"We wish to bring to your notice the loss of trade London manufacturers are experiencing through not having a service of direct steamers from London to Karachi. At the present time all London boats go via Bombay, and owing to the attitude adopted by the Bombay Port Trust regarding certain classes of deck cargo, orders are being passed to Continental competitors, as they can always ship direct to Karachi by the German lines. You will readily appreciate that with the present severe competition, to have to send cases, say, of inflammable liquids by rail from London to Liverpool for shipment, would greatly increase c.i.f. charges. It is, however, a more simple matter to ship via Antwerp, but we naturally dislike shipping by foreign steamship lines. Further, the extra freight and insurance charges make Indian c.i.f. prices prohibitive. A direct London-Karachi service, say one boat a month, would greatly facilitate Indian trade, which you will agree is to our mutual advantage. Will you kindly arrange to bring this matter forward at the next Conference, and we trust you will be able to accede to our request."

Artificial Silk Developments

REPORTS from Australia state that research has shown that with a small change in existing methods the lighter coloured eucalyptus plant can be used as a raw material for artificial silk. Experiments are to be carried out in this country, and the Australian Government are prepared to facilitate the establishment of an industry on these lines.

The Snia Viscosa Co. are reported to be financing a Russian factory. Before the war the Russian Viscosa Co. had a factory at Moscow. The Snia company is negotiating for a British factory site, and the claims of Liverpool, Darlington, and Paisley have been considered. There are indications that Liverpool may be selected. The factory when established will employ 2,000 workers, and have a probable output of 5,000 lb. per day—Sniafil is to be subject to the usual Customs and Excise duties of artificial silk.

At the statutory meeting of the Western Viscose Silk Mills, Ltd., at Bristol, last week it was stated that production would commence this year. Sir Max Muspratt, referring to the numerous artificial silk companies being floated, said that no doubt the increased production would be rapidly absorbed.

American reports state that a new process has been evolved by which cotton yarn or fabric can be dipped and immediately converted into a material closely resembling real silk. It is stated that German chemists have been working on the same lines.

Surplus Laboratory Apparatus

LIST No. S.S. 101E, a catalogue of surplus stock, has been issued by A. Gallenkamp and Co., Ltd. It comprises a great variety of laboratory apparatus, including among other things combination water ovens and stills; small laboratory requisites, such as burners, tripods, tongs, etc.; specific gravity balances, Berenger scales and sets of weights; various kinds of porcelain apparatus; glass-ware, including beakers, flasks, condensers, separating funnels, specific gravity bottles, etc.; graduated glassware, some stamped by various authorities; gas analyses apparatus; and thermometers (chemical, Beckmann, Anschutz, etc.), hydrometers, microscopes, and apparatus for physiological and bacteriological work.

Salesmanship Conditions in Colonial Markets

Australia as a Typical Example

The following notes on trading methods in the Colonies are taken from the recent official report on the economic and commercial situation of Australia by Mr. R. W. Dalton, H.M. Senior Trade Commissioner in the Commonwealth of Australia. They indicate the need, on the part of the British exporter, of carefully studying the local conditions and usages in the Overseas markets with which he desires to do business.

AUSTRALIA is at present Great Britain's second largest export market, although her population is only about 6,000,000. The statement of this fact alone should be sufficient to attract the attention of firms in the United Kingdom and to lead them to look more closely into the possibilities of development of this extremely valuable market. The loss of some of our leading European markets and the tendency throughout the world to increase tariffs and shut out imported goods have necessitated British firms looking further afield for markets which can at least help to absorb the excess of production which is available for export. This necessity has led to greater interest being taken in the possibilities of development of trade with Australia, and an increasing number of firms have shown a disposition to visit Australia and study its needs and organisations on the spot. During the last few years many direct representatives of important British concerns have paid visits to Australia, and from these visits very much good has resulted. In this direction, however, there is still room for improvement, and one cannot urge too strongly the desirability of such visits on the part of other firms, and the advantages and profit likely to result from them.

The magnitude of Australia and the diversity of its requirements in themselves demand that firms should give the closest possibly study, not only to the market as a market, but to the geography of the country, its variations of climate, the differences in its peoples and diversity of its economic life, all of which have a very important effect on its trade.

The Selection of Agencies

It is only when one begins to attempt to cover Australia by travelling over it and round it that the difficulties of organisation facing any firm which sets out adequately to extract the maximum amount of business from the Commonwealth can be realised. I am afraid it is a fact that a large number of firms who sell goods to Australia have little, if any, appreciation of these things. The majority are probably satisfied to sell to "London shipping" as long as this method brings business.

The placing of agencies in a country like Australia requires the most careful consideration and appreciation of the differences between the various States and the influence which these differences will have in the choice of an efficient organisation. There are some well-known firms of agents who have their own branches throughout Australia, and with whom agencies may safely be placed with the assurance that attention will be given to the agency in every part of Australia where business might be done. These firms, however, are relatively few, and it naturally follows that, being few, they are in most cases well supplied with agencies, and are often unable to consider further offers. In cases in which it is impossible to arrange agencies with such a firm it is desirable, if not essential, to consider carefully the appointment of separate agents in each State.

Although there are firms who operate throughout the whole of Australia, each State may be said to have its own separate and peculiar trading organisation. An all-Australia firm which may occupy a position of prime importance in one State may be of only secondary importance in another, and a purely local firm may in its own State be of greater importance than a much larger and more important all-Australia firm in that particular State. Further, one firm may operate in Queensland and New South Wales alone, or in Victoria and South Australia alone, or in South Australia and Western Australia alone, or in each one of these States alone.

These circumstances require consideration, and it is really only by personal contact in Australia itself that one can ascertain exactly what is the significance of any one particular firm—however generally important it may be—in any particular State or locality. To appoint an agent in either Melbourne or Sydney for the whole of Australia merely because he asks for the agency is often to rule out the possibility of securing the majority of the trade which might be available. There are exceptions, of course, and I have known of cases in which agencies have been given in this way with highly satisfactory results. This only happens, however, in cases where the main agent so appointed is energetic enough to organise thoroughly throughout the whole of Australia, either by the establishment of his own branch offices or by the appointment of sub-agents on terms sufficiently favourable to the sub-agent to make it worth his while to push sales.

Exploring the Outlying States

It has been pointed out to me repeatedly, and particularly in States like Western Australia and Queensland, that main agencies are often given for the whole of Australia to firms in either Melbourne or Sydney who have no adequate organisation in the outlying States. It is only natural that some firms should willingly accept agencies of this kind which it would well repay them to work themselves in the East, while, from other States in which it was not worth their while to put in any active organisation, they would be satisfied to draw a certain amount of commission. So it sometimes happens that the business of British firms which is well looked after in the larger States is neglected or insufficiently pushed in the outlying States owing to lack of proper organisation. Some of the best agents in these outlying States are not prepared to accept sub-agencies, or if they do accept them, they do so only until such time as they can secure a direct agency themselves for similar goods.

Furthermore, the agents in these outlying States complain that the commission which is offered to them from main agents is often insufficient to warrant their giving the attention necessary for the maximum of sales. It is of course impossible to generalise. Some main agents who have in their hands the appointment of sub-agents do in fact organise the business of principals in a very efficient manner, but, generally speaking, it is wise for firms trading with this market to retain supervision of such appointments with a view to ensuring that the agent who actually sells the goods is properly remunerated for his efforts and that the main agent who appoints him does not receive too great a share of the commission. This may seem a platitude, but experience shows that in Australia it is by no means uncommon for the sub-agent who is actually selling the goods in a particular State to receive a smaller share of the total commission paid on such goods than the main agent in one of the larger States who may never even visit the sub-agent's territory.

I have not attempted in this short *résumé* to deal with all the aspects of this question of appointment of agents, but have tried merely to indicate why it is so important that British firms should take the greatest possible care in the choice of agents and in satisfying themselves that the agents to be appointed are in fact in a position to cover the territory for which they desire an agency. It is impossible absolutely to guarantee the *bona fides* and suitability of firms wishing to operate agencies, but in these days it is possible to reduce the chances of mistake to a minimum if proper inquiry is made and sufficient thought is given to the needs of the market. In spite of this the goodwill of many British firms of high repute has been seriously prejudiced in Australia by the appointments of agents who would never have been appointed had the firms at home taken proper steps to understand the trading organisation of Australia, and to ascertain the standing and experience of the agent in question.

"London Shipping"

How necessary it is to have an extensive and efficient organisation may be realised to some extent by a consideration of the distances of the various buying centres from one another and the almost hopeless impossibility of working Australia from any one centre. There is as much reason in trying to work the United States from London as there is in trying to work Western Australia or Queensland from Melbourne.

It is well known that Australia is extremely well served by its London merchanting and buying agency organisations, but firms at home are inclined to regard all the various firms com-

posing these organisations as of one type, classed under the general description which British firms give to this class of trade, viz., "London Shipping." As a matter of fact, there are very important differences which it is well that firms at home should appreciate, if they wish to realise clearly the nature of the business which they themselves as manufacturers are doing with a country like Australia, and it is necessary that they should realise this. I am very doubtful whether some of the larger firms in England who make a point of doing a strict wholesale trade realise the nature and size of some of the shops and stores in Australia who buy from them direct through buying agents included in this so-called "London Shipping" organisation. It is not for me to say whether it is right or wrong that this retail direct buying should be indulged. The fact is that it exists and is, in its large and small units combined, a very important factor in the import trade of Australia. But if firms in England are doing this direct selling to the smaller retail (as well as to the large retail department stores) they should certainly know that they are doing it in case such selling is liable to affect the larger trade which they might possibly get with the true wholesale.

It is perhaps necessary to point out, therefore, that "London Shipping" in the Australian trade is comprised of a considerable number of different organisations, of which the following may be mentioned as being the most numerous :—

(1) The pure merchant who buys goods for his own account and re-sells them for his own account either direct or through an agent.

(2) The head offices of wholesale merchants who have branches in the Commonwealth.

(3) Branch of wholesale merchants whose headquarters are in the Commonwealth.

(4) Buying agents operating for wholesale merchants in Australia.

(5) Buying offices of Department Stores and large retail concerns.

(6) Buying agents who each act for a large number of retail concerns, whether large or small.

(7) Export agents, who, though resident in England, secure agencies for the sale of goods in the Commonwealth and usually in turn appoint agents in the Commonwealth to be responsible to them.

(8) A large number of concerns, usually small, who do what is virtually a kind of brokerage business, making deals in almost any class of goods for shipment to Australia as opportunity offers.

The Study of Local Conditions

There are variants of most of these sections of so-called "London Shipping," but those named are the main classes of division. It is not necessary to deal here with the advantages or disadvantages to British trade of any of these sections of merchanting. When carried on legitimately each of them serves a useful purpose and can be of definite service in facilitating the sale and shipment of British goods to the Commonwealth ; it is in fact largely due to the activities of some of them that British trade with Australia was established so strongly in the first instance and has kept a predominant position. I have only mentioned them to show how many and varied are the means through which British goods are sold to Australia and to indicate how necessary it is that British firms who sell to Australia through any or all of these channels should know in each case the class of business which they are doing. It is by no means an unknown occurrence for important trade through one of these channels to be stopped because of discovery that the manufacturer is also selling through one of the other channels, and unless firms know what they are doing in all cases they may find that for reasons which they do not understand their trade has suffered in the total.

Another point on which it is necessary that firms who are trading with Australia should inform themselves is where the buying power of the purchaser really lies. In some cases the London house may be merely an employee of the Australian house and in the great majority of orders may have no power whatever to vary the direction in which the order is given. In other cases London may have almost absolute power to divert orders, if it so chooses, from the manufacturers nominated by the Australian buyer in his order form. British manufacturers must be aware that a very great number of orders which reach London closed on particular firms of manufacturers never reach those firms because they are diverted by London buying houses at their discretion. In fact, quite a considerable business has grown up in London of London agents of British and Continental manufacturers securing the diversion of orders from firms nominated in indents. In this way a great deal of the effectiveness of a manufacturer's selling organisation in Australia may be defeated. British manufacturers must study these intricacies of Australian importing, so that they may know exactly what they are doing and where and how their goods are going to Australia, if they are to secure the maximum of business which might be available for them. Though Australia is at present passing through a period of high protection policies, this should not and will not rule out the possibility of development of British trade, and it will be well worth the while of British firms to study the market and take full advantage of the opportunities it offers.

Oils, Fats, and Soaps in 1925

British Import and Export Figures

THE extent of the oils and fats industries in this country is indicated by the fact that the imports of oilseeds, nuts, oils, fats, waxes and gums during the past three years have been of the value of (in million £) 44·5 in 1923, 52·0 in 1924, and 55·5 in 1925. The exports have been much less, namely, 5·6, 6·9, and 7·0 respectively, but these figures do not, of course, include soap exports and other manufactured goods produced from this imported raw material. The total weight of oilseeds and nuts received by the United Kingdom last year was over 1,200,000 tons, which is about 200,000 tons more than that received by France, the second greatest oil-milling country of the world.

The past year has not been a brilliantly successful one for the British oil mills. Prices of raw material have been remarkably firm, and on the high side, whilst the finished products, oils and fats, have not yielded much profit. Competition both in the purchase of seeds and nuts and in the sale of products has been keen in the world's markets. Russia is gradually increasing her export of linseed, and another valuable seed—and oil—formerly produced in enormous quantities in that country is sunflower seed and oil. This is at present included in the British returns under "other sorts," but in the near future may perhaps be worth a separate heading. The production of sunflower seed oil in Russia last year was estimated at well over 300,000 tons, which means that nearly one million tons of seed must have been grown. It is a valuable edible oil when properly made from the first pressing. Linseed imports into the United Kingdom declined to 340,000 tons, largely due to Argentine deficiency, but this was compensated by increased supplies of soya beans, 162,000 tons. Soya bean oil is now largely used in the paint industry. Imports of cotton seed also show a large increase, the total being 605,600 tons. Castor beans and "other sorts" show increases, whilst rape and sesame declined. A rather noteworthy feature is the heavy rise in oilcake imports. These increased by nearly 100,000 tons to 467,500 tons in 1925. In view of the tremendous output of home-made oilcake and the insignificant exports thereof this means a growing demand for cattle cake by British farmers.

Although linseed declined largely the imports of linseed oil increased from 2,654 tons in 1924 to 17,163 tons in 1925. Imports of coconut oil rose to 24,587 tons, and of palm kernel oil to 80,312 tons. Soya bean oil remained about the same at 29,510 tons. Palm kernel oil, soya bean oil and linseed oil were also the chief exports. Imports of lard, tallow and refined oils, lumped together, remained about the same at 182,500 tons, whilst margarine, 69,354 tons, showed an increase of nearly 4,000 tons.

The soap, candle and glycerine figures are given in the following table of imports and exports of soap, candles and glycerine into and from the United Kingdom in 1923, 1924, and 1925 :—

	Imports.			Exports.		
	1923. Cwt.	1924. Cwt.	1925. Cwt.	1923. Cwt.	1924. Cwt.	1925. Cwt.
Soft	2,482	2,921	1,455	21,712	37,299	54,742
Household and laundry	138,189	141,162	139,229	1,124,106	1,341,516	1,306,870
Polishing and scouring	63,921	54,930	52,481	19,419	25,936	22,613
Toilet and shaving	71,892	75,757	50,737	60,106	67,009	63,421
Miscellaneous	2,051	10,928	5,066	57,180	61,876	35,896
	278,535	285,698	258,968	1,282,523	1,533,636	1,485,544
Candles	—	—	—	131,231	171,468	117,442
Glycerine	28,467	28,210	5,963	160,257	241,035	195,624

Smokeless Fuel

To the Editor of THE CHEMICAL AGE.

SIR,—I read with considerable interest a letter from Sir Napier Shaw on the subject "Coal Report and Smoke Problem," and it occurs to me that I might make one or two comments on this important subject.

Sir Napier Shaw, mentioning "there are some who tell us that if we want smokeless fuel we have got to make it," might have pointed out that these critics have overlooked the fact that we have in this country the finest anthracite coal in the world, which everyone surely now knows is absolutely smokeless. Although the yearly output of this coal is under 5,000,000 tons, yet not 50 per cent. is consumed in this country, thus showing that although the cost is infinitely higher to transatlantic and continental buyers, they evidently appreciate its economical advantages. There are large quantities of what is termed "Duff" (actually dead small) produced at the anthracite collieries which has but a very poor market, and is disposed of at considerably under cost price. This is only waiting to be made up into a smokeless fuel to enhance its value considerably, and provide the consumer with what is now so much talked about, but as a matter of fact not really sought after. Possibly, if legislation is brought to bear on the matter, this may be a question of compulsion.

It is difficult to overestimate the economical value of anthracite, whether it is used for central heating, internal combustion stoves, suction gas plants, steam-raising (here you have a perfectly smokeless coal for steam purposes) or open fires. The only reason one can suggest for the fact of its not being used to a greater extent in this country is that its initial cost is higher than the ordinary smoke-producing coal, and that we, in our old-fashioned way, have not yet learned to appreciate the true value of what we have at our own doors.

Apart from anthracite we have in South Wales other smokeless coals commonly called semi-anthracite or dry steams, which are all waiting to find their proper place in the scheme of things, and it is possible that we have not been permitted up to the present to realise what we have actually got, until such a time as we have learnt its true value. There are also immense possibilities in pulverised fuel, of which but a few years ago there was no mention, but which to-day is coming into use, and undoubtedly will be increasing to a greater extent in the future.—Yours, etc., H. STANLEY L. COOK.

Swansea, March 20.

Modern Grinding Machines

To the Editor of THE CHEMICAL AGE.

SIR,—Mr. Wilson's letter, dated March 8, in criticism of my remarks in opening the discussion on "Modern Grinding Machines" at the joint meeting of the Society of Chemical Industry and the Oil and Colour Chemists' Association, confirms me in my conviction that our manufacturers really need chemical engineers in large numbers if they are to keep pace with progress in industry.

I do not think that the reference to "cheap foreign machines" is up to date, and while I know that English manufacturers can make the best grinding plant, I also know that English plant is not invariably the best, nor is foreign plant the worst.

Mr. Wilson's cure for a small pulley need not be commented on by me, as it carries its own condemnation, but I do protest against the suggestion that a firm using fine grinding plant should rely for its *brains* on the workmen of the manufacturers of that plant.

I am of opinion that a firm using grinding or any other plant should know more about their own job than anybody else, and if they do not it is time they were out of the business. Any manufacturer worthy of his job should be able to produce higher outputs with greater efficiency than any maker of plant dare guarantee.

I should like to tell Mr. Wilson that some grinding machines with the highest efficiency are at the present moment actually foreign made, and they are *not* cheap. Again, a thoughtful chemical engineer with his eye on quality as well as profits will invariably find it necessary to modify on occasion even the best plant that can be supplied.—Yours, etc.

J. W. HINCHLEY.

Imperial College of Science and Technology,
March 18.

Problems of Sulphate Caking

To the Editor of THE CHEMICAL AGE.

SIR,—In your issue of March 13 you deal with the difficulties which are being experienced by makers of sulphate of ammonia in their attempt to reduce or eliminate the present tendency of sulphate of ammonia to go hard when stored for a period under certain conditions.

We notice you mention that Germany is attacking this problem by the addition of kieselguhr to the crystals. It occurs to us that an expedient adopted by makers of salt "sodium chloride"—viz., an addition of about 2 per cent. light carbonate of magnesia—might meet with success. As you are aware, "Cerebos" runs very freely from the cellar, etc., and the secret is the presence of light carbonate of magnesia.

We are large makers of this chemical, and should like to hear your views on the possibilities of its adoption in this direction.—Yours, etc.,

THE WESTERN CHEMICAL CO. (PAISLEY), LTD.
C. M. BIGGART,
Sandyford Works, Paisley. Managing Director.
March 18.

[This is an interesting suggestion which we have arranged to have tried out by a well-known sulphate of ammonia chemist. The drawback would seem to lie in the fact that magnesium carbonate would disengage ammonia from the sulphate of ammonia, and it remains to be ascertained whether the gain in physical condition would more than offset the loss of nitrogen.—ED. *C.A.*]

Training of Chemical Students

To the Editor of THE CHEMICAL AGE.

SIR,—For some years past I have advocated the passing of a portion of the college student's holidays in some works as an addition to his college training at this most receptive period ("Notes on Chemical Research," p. 189); even that he should take service as a process man, so that he may obtain knowledge of the ways of the workers he must ultimately control.

The British Dyestuffs Corporation has made a useful start in this direction, and it is understood that it is now possible for selected students to fill in their time in these works during vacation. This experience of works practice gained during the college period might be extended if the Association of British Chemical Manufacturers prepared a list of those works which the student could enter in this way. It is obvious that there are many works where this could not be arranged; but there must be a number where it is possible, and where the student could gain an insight into works practice.—Yours, etc. W. P. DREAPER.

Hampstead Heath, N.W.3.

A New Use for Apatite

To the Editor of THE CHEMICAL AGE.

SIR,—In the issue of THE CHEMICAL AGE for January 30, 1926, p. 93, under the heading "A New Use for Apatite," appears a paragraph describing the development of a process for the preparation of dicalcic phosphate by the agency of perchloric acid. This process is described as being the result of researches carried out at Pusa, in India.

You will be interested to learn that this process is described as the "Electrolytic Method of Palmaer," in a book published by Paul Parey, of Berlin, in 1923, "Die Düngerlehre," by D. N. Prjanischnikow, translated by M. Von Wrangell, p. 241. The process is also briefly described in the *Chemiker Zeitung* for March 8, 1924, p. 122.—Yours, etc. W. E. C.

South Africa, March 4.

Pyrometer Protection Tubes

A LEAFLET describing Pynolag pyrometer protection tubes states that they are developed from rolled sheet, having a high chromium content and a wall thickness of only $^{5}/_{64}$ inch. They show little if any temperature lag, are sensitive to sudden changes of temperature, and resist high temperature, corrosion, shock, etc. They give satisfactory performance for constant service at 2,100° F. and for periodic service at 2,300° F. The tubes are supplied in lengths from 12 inches upwards in varying diameters, and are being marketed by the Louis C. Eitzen Co., 280, Broadway, New York.

British Dyestuffs Capital

Reduction Scheme Sanctioned by Court

A PETITION by the British Dyestuffs Corporation, Ltd., to confirm a reduction of capital and sanction a scheme of arrangement came in the Chancery Division on Tuesday before Mr. Justice Eve, who granted the order asked.

Mr. Vaisey, K.C., who appeared for the company, said that the respondents were the Board of Trade and certain representatives of the Government, who were represented by Mr. Dighton Pollock. The scheme involved a reduction of capital by a very considerable sum.

The Judge: Do not be afraid to mention it. We all contribute to this reduction; five millions of money lost.

Mr. Vaisey said the company had not met with the success which was hoped for at first, but the matter had been very carefully considered, and this scheme was put forward as the best way of turning over a new page and starting afresh. The amount by which it was proposed to reduce the capital was £4,421,532, and of that sum £2,841,396 was going to be written off on the basis of its being lost or misrepresented by available assets, and the balance of £1,580,136 was going to be returned in cash to certain of the shareholders. There were three classes of shareholders—preference shareholders who were entitled to a non-preference dividend of 7 per cent. and a preference in winding-up, and two junior classes of preferred ordinary shareholders. The matter was a little complicated in this way: that the Government were holders of £850,000 preference and £850,000 preferred ordinary. What was proposed to be done as regards the Government shares was that the £1,700,000 held by nominees of the Government was going to be surrendered and cancelled, together with one extra share known as the Government share. The Government was to receive in consideration for that the sum of £600,000 in cash, and, besides giving up their shares, the Government were to relinquish all rights of control over the company, which was now to start as an ordinary commercial undertaking unfettered by the control which had been hitherto exercised by the Government.

Judge's Critical Comments

The Judge: Has it not been a commercial undertaking so far?

Mr. Vaisey said it was to be freed from departmental restrictions.

The Judge: This departmental control has cost the country £1,100,000; that is almost another penny on the income tax. You will get £600,000 for £1,700,000 invested; your money and mine. Nobody cares a bit till the suffering is brought home. This does not stand by itself. We keep on doing something of this sort; investing the country's money in what I call rotten undertakings. What becomes of the 4,117,121 preference shares? Do you leave them outstanding?

Mr. Vaisey said they first repaid in cash to the holders of these shares 6s. per share. The shares amounted to 3,267,112, and they were to be reduced to 14s. each.

His Lordship asked where the £600,000 for the Government and £900,000 for the preference shareholders were to come from.

Mr. Vaisey said the money was to come out of the realisable investments which appeared in the balance-sheet at £3,247,320, and it appeared from Lord Ashfield's affidavit that that figure was not excessive, but fairly represented the value of investments. It was proposed to write down the value of land, buildings, plant and machinery, which was now estimated at £1,760,000. Lord Ashfield said the capital as reduced would be sufficient for the wants of the company. Having reduced the preference shares to 14s., they proposed to subdivide them into 2s. shares, and then consolidate them into £1 shares. The result was that 2,286,984 shares of £1 represented so much of the original preference shares as had not been cancelled. The preferred ordinary shares, disregarding the Government holding, were to be written down to the extent of 6s. 8d., and that necessitated cancelling £1,078,599 and the reduced shares of 13s. 4d. were to be sub-divided and consolidated, with the result that there would be £2,157,198 shares of that class.

Government Control

His Lordship: How was it suggested that Government control acted injuriously to the company?

Mr. Vaisey said the difficulty was in making decisions in a hurry; they had to refer matters to the Board of Trade.

His Lordship: Have the directors appointed by the Government retired?

Mr. Vaisey said they had, but there was an understanding that the company should keep in touch with the Government as regards discussions on research work.

His Lordship: No more money, I hope, Mr. Pollock?

Mr. Pollock: Not a penny more.

Mr. Vaisey said there was a further understanding that the constituents of the company were to remain predominantly British. There was a restricted right to transfer.

His Lordship: So as to exclude the people who know most about these things. It may be wise.

Mr. Vaisey: It may be best for us.

His Lordship: That is evidence of the Locarno spirit, no doubt. (Laughter.)

Mr. Vaisey said the deferred ordinary shares were to be reduced to 6s. 8d., and consolidated into £1 shares. The result of all these operations was that there would be 4,775,580 ordinary £1 shares fully paid in lieu of the present capital of £9,197,116 in three classes. The nominal capital would be reinstated at £10,000,000. Under the scheme one of the Government directors would probably remain, so as not to break the continuity of management.

His Lordship: What does the Government think about it?

Mr. Pollock said the Government had been considering the scheme for a long time, and had come to the conclusion it was the best course to adopt.

His Lordship: The only thing to do.

Mr. Parker Smith, a contributory of the company, criticised the scheme on points of detail, but did not wish to offer a fractious opposition to it.

His Lordship said he could only act on the evidence before him. Here was a scheme which had been a matter of negotiation. Although he sympathised with those who had lost their money, he was rather glad to see the country was out of it, because he did not know how much more would be lost before finality came. He would sanction the scheme.

Society of Glass Technology

Welding of Blue and Crystal Glass

ON Wednesday, March 17, the Society of Glass Technology paid a visit to the works of Messrs. Webb, Corbett and Co., Ltd., Amblecote. Mr. C. T. Moorshead, president of the society, presided at a luncheon.

At the technical session three papers were read. The first upon "The Flashing of English Crystal by Cobalt Blue Glass," by Professor W. E. S. Turner and Mr. Winks, was presented by Professor Turner. It pointed out that any failure to weld crystal glass on to blue glass in common practice was not due to a difference of thermal expansion. This difference was not sufficient to cause cracking, which was probably due to the difference in the rates at which blue and colourless glasses cooled off, that was in the rates at which they absorbed or lost heat. The rate of setting increased, and the working range decreased as the amount of cobalt oxide in the glass increased.

Sillimanite in Glass Works Practice

A paper on "Some Notes on the Use of Sillimanite in Glass Works Practice" was read by Mr. A. Cousen and Professor Turner. The authors stated that some of the uses to which sillimanite had been applied in glass works practice, with good results, were for pots, for lining the sieges of furnaces, for gates for damming the flow in the Danner tube-drawing machine, and also in a flow-feeder type of machine in the back of the forehearth of a furnace, for pot rings, and in the form of slip or paste in stacks from regenerators in furnaces. In general, sillimanite showed up best under high temperature firing.

"Some Remarks on Recuperative Gas-Fired Furnace Practice" was the subject of a paper presented by Mr. F. G. Clark on behalf of Mr. P. Marson. Attention was directed to the importance of the provision of suitable hard-burnt and well-shrunk refractory materials for the construction of the furnace chamber and its siege. Pot failures could be classified into three sections: (1) Those inherent to the composition and nature of the pot clay mixture, their manufacture and annealing; (2) those which could be attributed to faulty methods of operating the furnace or to bad furnace design; (3) those inherent to the treatment of the pot and to the design or shape of the pot itself.

Annual Meeting of the United Alkali Co.

Chairman's Review of the Year

At the thirty-fifth annual meeting of the United Alkali Co., Ltd., held at Liverpool on Wednesday, Sir Max Muspratt, Bart., the chairman, presided over a large attendance, and in his address reviewed the principal features of the year and indicated some important new developments.

In proposing the adoption of the report and balance sheet the Chairman said :—I must first refer to a personal and tragic event which overshadows all others in the year just past. I refer to the sudden death of John Rayner, one of our managing directors, only a few days after the last annual meeting. Mr. Rayner's perfect old-world courtesy, the judicial quality of his mind, and his kindly breadth of outlook gained for him a unique position in the chemical industry, and his influence, amounting to affectionate regard and confidence, extended far beyond this country, notably on the continent of Europe and in North America. Almost simultaneously with this loss, John E. Davidson was taken seriously ill, and was compelled to retire from the position of managing director. I am glad to inform you that he has recovered, and is with us to-day as an ordinary director, having completed this month sixty years of service in the alkali industry.

I am sure you will bear with me for a few moments while I speak of the work which these two great and unassuming men have done for our company. Through thirty years of light and shade they directed the destinies of this great undertaking. In the darkest days—and few know how dark some of the days have been—they never faltered or lost heart or glanced at other brighter fields where their abilities would have found them a ready welcome. And they have had the proud pleasure of seeing, on the foundations they have so patiently reconstructed, a new structure arise which stands in the front rank of the chemical industry of the world.

On the loss of two managing directors, considerable reorganisation has been necessary under the two remaining managing directors, Mr. Short and Mr. Holden Davidson, to whose number for the time being it is not proposed to add. The shareholders may rest assured that these managing directors have an able and loyal staff, who will carry on the traditions handed down to them, and whose merits have been duly recognised in the scheme of reorganisation.

A Difficult Year

The year just past has not been an easy one in the chemical industry, but the final results are satisfactory. The total net profit is down by £66,000, but in 1924 there was a refund of taxes of £65,000, and also £11,000 from other superfluous reserves. On the strength of that windfall the directors decided last year to add an additional 2½ per cent. to the ordinary dividend, but this cannot be expected to be recurrent. The carry forward, if the proposals as to dividend are adopted, will be some £3,000 over that of last year. On the profit and loss account, the head office expenses show an increase of £34,000. This is entirely due to the incidence of income tax under the three years' average ; apart from that there is a reduction of some £4,000 at head office. The gross profit shows a reduction of £37,000, which, in view of the large concessions in prices of our products, and some of the adverse circumstances to which I will refer later, is not unsatisfactory.

The only items in the balance sheet to which I need refer are the bank overdraft of £31,000, which is only a small matter in a company of our magnitude, our increased reserve fund, which now stands at £1,100,000, and our additions to capital expenditure of £128,000.

You may have observed that in the accounts now before you, the amount deducted from debentures representing debentures redeemed, viz., £376,190, is identical with the figure appearing in the debenture redemption account (which is really an account in the nature of a reserve). In the accounts for 1924, this account was, in total, £15,160 less than the amount deducted. This difference was created by reason of the fact that the company, expending £15,000 a year in redemption, is able, when the debentures are below par, to buy more than the nominal equivalent, hence the difference which hitherto has been carried to the profit and loss account. In view of a recent decision, this amount has now been re-credited to the debenture redemption account.

The past year has been a difficult one in the chemical industry owing to its fluctuations and uncertainties. In sulphuric acid we have had a very bad year owing to the grave depression in the iron and steel industry and the superphosphate industry, and, although we have probably suffered less than most makers, we have been working at a low rate of production compared with our capacity. The extensions of our Fleetwood works are now completed to an extent which we estimated would meet increased demand for some five years to come. The disturbed conditions in the Far East have, however, militated against our reaping the full advantages we had anticipated, as the demand has been subject to considerable fluctuation, and irregularity of working does not conduce to the most economic results in highly complex plants. The mines in Spain have been somewhat affected by a prolonged drought, lasting some eighteen months. As a result, the yield of copper was appreciably reduced. This does not necessarily mean a real loss but postponed profit. as there has been ample rain in the last few weeks, and this year should give a largely increased yield of copper.

I referred last year to increased competition from Germany, especially in saltcake, and our confidence in our ability to deal with the situation, and I am pleased to state that satisfactory arrangements have been made for dealing with this branch of our business. Generally speaking, the stabilisation of the mark in Germany has produced a much sounder condition in world affairs, as has the return to the gold standard in Great Britain. Both have produced their difficulties, but the chemical industry has probably seen these difficulties through, and the future is full of promise. It would be desirable if an effort were made to stabilise the franc in France and Belgium. The fluctuations in the currencies of these countries make it very difficult for British manufacturers to compete, especially when the franc is a falling one.

The trouble in the coal trade must, of necessity, cause great anxiety to all the large manufacturers of this country. Fuel is one of our chief raw materials, and it is of vital importance to the heavy chemical industry that it should be made available, not only to our own but to industry generally at an economic price, and if this is to be achieved the first essential is peace in its widest term.

New Synthetic Ammonia Enterprise

A great deal is going on in chemical development, and your board and staff are keeping well abreast of the times. It is too soon to speak of some of the projects under consideration, but I have at previous meetings spoken on the question of synthetic ammonia and nitric acid. We propose to go a step further than that already reported. Within certain limits we are in an advantageous position to produce synthetic ammonia and use it as such, or convert it into nitric acid, and we have arranged to adopt the Casale process for this purpose. We do not intend to go into the competitive market, but intend to confine ourselves to our own requirements, and are satisfied that the scheme is sound. This and other developments require capital, and we have thought out carefully how best to carry this out, and intend to increase our capital resources gradually, if and when necessary.

As a first step we are separating our house property from our industrial finance. We have quite a number of houses, some of them old, some recently erected, to meet the essential needs of our expanding works, and for some of our staff in the district where we are concentrating our reconstructed works. We are arranging to form a subsidiary housing company to take over our existing properties of this character, and any that we wish to erect in the future ; at the same time we are issuing £150,000 of debentures of this company, the bulk of the proceeds of which will be available for the regular enterprises of the company.

The sports' pavilion and athletic ground at Widnes was opened last June, and has been well supported from the outset by both the staff and the workmen, and is cementing still further the happy relations with all our employees which tends so greatly to the smooth working of our company.

You will have noticed that a change is projected with

regard to the auditors. The result of the policy of the board in concentrating the works has rendered it no longer necessary to employ four separate sets of auditors, and the board have arranged, subject to your confirmation, for Messrs. Edmund D. White and Sons (who are so well-known in the chemical trade) to take over the sole audit of the company's accounts. I take this opportunity of acknowledging the long and efficient services of the other firms hitherto engaged upon the audit, and of expressing our appreciation of the courteous manner in which they have met the board's suggestions for the making of one firm wholly responsible for the work in the future. (Applause.)

Dr. G. C. Clayton, M.P., in seconding, congratulated Sir Max Muspratt on the honour conferred upon him and on the company by his election as president of the Federation of British Industries. In this capacity he would have difficult problems to face, but they who knew him felt that the Federation had made a wise selection, and that Sir Max would do valuable service to British industry. (Hear, hear.)

Dr. Clayton, continuing, thanked the company's staff for their work during the year. He said the new and serious technical developments constantly being made called for exceptional energy, application, and alertness. The British chemical trade was extremely fortunate in its workmen; they were unsurpassed by those of any other nation, speedily adapting themselves to alterations in processes, and they had every reason to be proud and grateful for their skill and good work. (Hear, hear.)

The motion was carried unanimously.

Mr. R. M. Bewick, Dr. G. C. Clayton, M.P., Mr. H. Gaskell, and Mr. J. E. Davidson were re-elected directors.

A cordial vote of thanks was tendered to the chairman.

Sir Max Muspratt, in reply, expressed a hope for the continuance of the company's prosperity.

Discoloration in Textile Fabrics

Research on Micro-Organisms

A MEETING of the Nottingham Section of the Society of Chemical Industry was held on Wednesday, March 17, when the officers and committee were elected for the next session as follows:—Chairman, Dr. E. B. R. Prideaux; vice-chairmen, Mr. G. J. Ward and Mr. White; secretary, Mr. Ainsworth; treasurer, Mr. Law. Papers were submitted by Dr. H. S. Holden and Mr. H. H. Barber on "A Study of Some Micro-Organisms Causing Rotting and Discoloration in Fabric," and by Mr. T. F. Heyes on "The Action of Micro-Organisms on Silk."

Rotting and Discoloration

In presenting the first paper Dr. Holden pointed out that the manufacture of textiles was inevitably carried on under conditions which largely precluded the application of sterile methods. The manufacturer's raw materials, the water he used, and the air of his mills were all contaminated with micro-organisms which were potentially injurious to his products. The micro-organisms so far studied fell into three groups:—bacteria, yeasts, and moulds. In the case of wool, the bacteria concerned were mostly common soil types which occurred naturally on the living fleece as spores. These spores if not dislodged germinated and caused discoloration, usually of a yellow or yellowish brown character, and pronounced tendering. The spores were very resistant to germicides of various types.

In addition to these, three common pigment producing bacteria had been found to produce staining on wool, viz.:—*Bacillus prodigiosus*, *B. violaceus*, and *B. pyocyaneus*. Acidification of the wool tended to inhibit the growth of bacteria, but encouraged the growth of yeasts and moulds. The moulds produced discoloration and tendering, but were slower in action than bacteria. The discoloration varied from yellow to red, brown, and violet. Yeasts produced discoloration only. In the case of starch-dressed cotton goods, the frequently acid starch used provided a suitable food material for numbers of yeasts and moulds, many of which were pigment producing and which gave rise to widespread discoloration.

One species of *Penicillium* had been studied in some detail in the Department of Industrial Bacteriology, Nottingham University, mass culture on an inorganic salts nutrient and sucrose being used. The pigment produced by the organism on this medium was of a deep orange-red colour with green fluorescence. This was freely soluble in alcohol and readily yielded a lead salt. No crystalline product had been obtained from this. A second pigment, orange in colour and sparingly soluble in alcohol and ether, was also obtained. The mass cultures also yielded a fat of pale yellow colour (M.P. 13° C.), the yield being 14 per cent. of the dried residue. The fat had a saponification value averaging 194 from three batches. The Hehner value was 91·8–92·9. The fatty acids had a M.P. of 36° C. and a S.P. of 32° C., whilst their mean molecular weight was approximately 288. On treatment of the lead salts with ether, saturated and unsaturated acids were obtained in about equal proportions. The saturated acid was a pale yellow, crystalline solid, M.P. 50·5° C., S.P. 49° C. The unsaturated acid was also pale yellow and liquid at ordinary temperatures.

Micro-Organisms and Silk

Mr. T. F. Heyes, in his paper on "The Action of Micro-Organisms on Silk," stated that various aspergilli were found to grow readily on tin-weighted silk fabric, but they caused no damage. Several common bacilli were found to tender spun silk yarn on incubation at 375° C. for several months. Silk hosiery fabric was tendered slightly in the cold by *B. Uycoides* and possibly *B. Protens*. Moulds of various kinds were found to grow readily on this fabric without tendering it. No micro-organism was found permanently to discolour silk.

The Fastness of Dyes

Efforts Toward Standardisation

A MEETING of the Manchester Section of the Society of Dyers and Colourists was held on Friday, March 19, when Professor J. Huebner presided and a paper entitled "The Standardisation of Methods of Testing the Fastness of Dyes" was read by Mr. Alan Crummett, M.Sc., A.I.C., of the British Silk Research Association.

Mr. Crummett stated that having regard to the present fastness requirements, methods of testing the fastness of dyes on textile materials were absolutely necessary, but a good deal of annoyance and inconvenience were caused by the non-uniformity of methods employed. In 1911, a German Committee made the first attempt to establish standard methods for testing the fastness of dyes on wool and cotton. Since the War, efforts had been made in England in this connection, particularly by the Research Associations. The British Silk Research Association had recently published a report containing suggested methods and standards for testing the fastness to light, water, washing, degumming, and perspiration fo dyes in silk. It was hoped that by the circulation of this report amongst members of the silk industry, for criticism, uniformity of testing might be ultimately established. This question had also been recently taken up by the American Association of Textile Chemists and Colourists, work being still in progress. Proposals had been made for the adoption of standard methods of testing, and negotiations with the Society of Dyers and Colourists and other similar bodies, as to the possibility of obtaining international agreement, were in progress.

The use of artificial sources of light for testing the fastness to light had often been proposed, and lamps of various types had been invented. The recently introduced violet carbon arc for this purpose, whilst being a rapid and convenient fading medium, did not give entire satisfaction, and so far on really reliable substitute for sunlight had been found.

Dial Thermometers

WE have received a leaflet describing easy-to-read dial thermometers, manufactured by the Cambridge Instrument Co., Ltd., of 45, Grosvenor Place, London, S.W.1. The thermometers are made in various standard patterns and ranges to satisfy industrial requirements for the measurements of temperatures between −10° F. and +550° F. (−20° C. and +290° C.). The bulbs of the instruments, which are exposed to the temperature to be measured, are connected to a Bourdon gauge tube. The instruments are much more robust than glass thermometers, can be read at a glance by a pointer on a dial, and may be erected at some distance from the position where the temperature is to be measured.

The Dyestuffs Industry and the State

Critical Address by Dr. Levinstein

DR. HERBERT LEVINSTEIN delivered an address on "The Dyestuff Industry and the State," at the Dyers' Hall, London, on Wednesday. Mr. Septimus Marshall, Renter Warden of the Company of Dyers (by whom the course of lectures had been arranged), was in the chair.

Early Days

Some sixty years ago, Dr. Levinstein said (when both the Huddersfield and the Blackley works of the British Dyestuffs Corporation were already in existence), the German dyestuff industry was small; the British industry founded on the invention of "Mauveine" by Sir William Perkin was predominant. In 1869 Perkin in England and Graube in Germany almost simultaneously patented a process for making synthetically a substance now called alizarine, which had been recognised to be the effective constituent of the Madder plant which was formerly used in enormous quantities for dyeing Turkey red. Perkin retired from business in 1874. Soon the world's trade in alizarine passed largely into German hands. For the first, but not for the last, time Patent Law laid a heavy hand on British enterprise.

Owing to certain anomalies of the German Patent Law any German firm was free to manufacture alizarine in Germany. In 1881, seven years after Perkin retired, the Germans combined and cleared £1,000,000 in one year on this dyestuff alone. On these profits were based the subsequent developments of the German dyestuff industry. In 1882, just before the alizarine patents expired—a partly British invention—the Germans issued a circular threatening to withhold supplies of alizarine unless British consumers were willing to contract ahead for German alizarine for twelve months after the expiration of the patent at 2s. 6d. per lb. This plan was broken by the formation of the British Alizarine Co. The price then fell to 4½d. per lb. The development of the German industry after this was rapid, and based on their experience with alizarine they became past masters in the art of exploiting our patent laws. His father first awakened public interest in this dry and technical matter and was the driving force behind the Act which Mr. Lloyd George fathered as President of the Board of Trade in 1907.

The Industrial Spirit Duty

In the manufacture of dyes the Germans had formerly another great advantage. They had no heavy duty on industrial spirit as in England. In 1902 the cost in England of diethylaniline from duty-free alcohol would have been 5½d. per lb., whereas the actual cost of this product from duty-paying alcohol was 2s. 5½d. It was only after twenty years of persistent effort, bitterly opposed by the German dyestuff companies, that Parliament was induced in 1907 to pass a more equitable British Patent Act. The restrictions on the use of duty-free spirit persisted even longer, and until recently rendered it impossible to use undenatured alcohol on reasonable terms for the manufacture of aniline dyes.

Partly as a result of these two difficulties and delays, it had become more profitable to manufacture dyestuffs in Germany than in Great Britain. Purely commercial, very human, and natural reasons took the few German chemists of great talent—such as Caro, Witt and others, who had attached themselves to British firms—back to their native countries, where they could earn greater salaries. British dyestuff manufacturers never obtained—nor could obtain before the war—one fraction more than the world's prices for their commodities. They always accepted competition prices where they did business. Had they had, as the British industry had to-day, the first refusal for all orders in the home market, they would have been immensely strengthened in competing with the Germans abroad. Then costs would have been lower—thanks to the greatly increased and assured turnover. Now the State permitted the use of duty-free spirit on reasonably fair conditions and had strengthened our Patent Laws against the old abuses. The Dyestuffs Act not only prohibited the importation of foreign dyestuffs save by licence; it gave the home manufacturer an amount of information regarding foreign products and the consumers' demands which pre-war manufacturers would have regarded as priceless.

Patent Act of 1907

The essential provision of the Patent Act of 1907 compelled the foreign patentee to work his patent in Great Britain provided that he worked it abroad. In consequence of this Act the great German companies, Badische, Bayer, and Berlin (the "three B" group), bought a plot of land on the banks of the river Mersey with railway connections and the possibility of constructing a deep sea wharf on the River Mersey. The development of this scheme, as also the further development of the Ellesmere Port works by the M.L.B. group, received a sudden check in a judgment of Mr. Justice Parker (afterwards Lord Justice Parker), who decided that to satisfy the provisions of the Act it was not necessary for the patentees to manufacture within the realm the full requirements of the home market. The judgment further threw on any complainant the onus of providing the proportion actually manufactured. Thus was the Patents Act, so greatly feared by the Germans, robbed of its efficacy. As a result the country, when war came, was left with a plant for making hydrosulphite of soda at Bromborough, which, alas, drew even the sulphurous acid required to feed it from Germany. It also gave us at Ellesmere Port an indigo plant, more precisely a plant for melting phenylglycine, the last process only in the making of indigo. Thus, despite the Patents Act, the control of the British textile dyestuff industry by the German Dye Cartel, though well disguised, had become very complete, and the abandonment of the manufacture of many intermediate products formerly made in England and the pulling down of the plant formerly employed in this branch of industry greatly strengthened the German position. The Ellesmere Port indigo works manufactured by arrangement with the Badische Co. about half of the indigo used in this country. The factory designed by a French designer, M. Nadin, was neat and comt pact and admirably suited for the purpose of melting phenylglycine, and recovering from the melt not only indigo but also the excess of alkali. But there was no plant making phenylglycine, the mother substance. Like the sister factory a-Creil in France, Ellesmere Port drew its supplies of phenylglycine from Hoechst-on-the-Main. There was thus in 1914 no plant in the country for making phenylglycine, and we had therefore to make phenylglycine and later on metallic sodium before we could operate. Further, there was no chloracetic acid available for making phenylglycine. All these substances were required by the military authorities for the manufacture of iodo-acetic ester.

British Dyestuffs War Work

Dr. Levinstein reviewed at length the part the German dyestuffs industry played in the war and gave an account of what the British industry did.

The best work of the British dyestuffs industry, he said, was done during the war and in the "scarcity period" which followed. The following figures illustrated this: The total consumption of dyestuffs in Great Britain in 1913 amounted to 45,000,000 lb. The German imports in 1913 were 38,000,000 lb., the difference of 7,000,000 lb. was supplied partly by the home manufacturers and partly by the Swiss. For the most part the intermediates used in manufacturing both the Swiss and the British share were made in Germany. Five years later, in the year ending October 31, 1919, the production and sale of dyestuffs by the firms constituting the British Dyestuffs Corporation reached 23 million lb. of dyestuffs made from acids and intermediates manufactured in their own factories. In the twelve months ending October, 1920, the production reached 35,500,000 lb. This, of course, necessitated a corresponding increase in intermediate production.

Unified control provided the means. It could be safely said that during the scarcity period not one of the belligerent countries, except Germany, was so well supplied with dyes as was Great Britain. In 1919 and 1920 the exports of dyed and printed cotton piece goods amounted to £270,000,000. This was the value only of the coloured cotton piece goods. It did not include cotton yarns, nor woollens, nor silks, nor the many other coloured materials exported in quantity, for which dyes were required. Yet the value of only the cotton piece goods

exported was some thirty times greater than the capital invested in the British Dyestuffs Corporation. Of this the amount invested by the Government was £1,700,000, less than 1 per cent. of the value of the coloured piece goods exported during these two years.

Truly the British dyestuffs industry rendered good service in those years, service that justified the labours of those who recreated it. There was practically no other source of supply. The world was starved of textiles. Colossal export orders were obtained at that time. It was these bulk supplies of dyes, aided by the Swiss specialities, which enabled our merchants to take advantage of their opportunity. Would anyone venture to say that we were handicapped at the Peace Conference by any hold the Germans had on us with regard to the supplies of dyes? No. Indeed when hostilities ceased, and for some time afterwards, there were practically no German supplies available. To effect this was no small undertaking. At that period the British Dyestuffs Corporation employed 8,000 people. The land in connection with the works comprised 1,050 acres, buildings and ground floor space of 42 acres; nearly 300 scientific chemists were engaged on process work or research. That was a considerable creation. Alas! the conditions had changed and under Government control much of the ground gained had been lost. It was a story with a moral of very wide application.

Scientific Management

After reviewing later developments and criticising the policy of appointing non-scientific men as directors of highly scientific industries, Dr. Levinstein concluded: "There is no such thing in America as a professional director. Those who run the big concerns are those who know every detail of the business, and who have grown up with it. He may exist in France, though I have never come across him, but he certainly does not exist in Germany. The heads of the great German concerns were of the calibre of Dr. Bosch, Dr. Duisberg, and the Weinbergs, and had been brought up in the industries which they controlled. . . . I impute no bad motives. But the fact remains that the balance of industry has been rudely upset. The men who talk have usurped the place of the men who do, the men who have the gift of advertisement of the men who know, the men with the tricks of the market place the place of the men of science, of ideas and patient hard work, of devotion to the child of their life-work."

Professor Green and Mr. Justice Eve

The Chairman moved a vote of thanks to the speaker, and in seconding it, Professor A. G. Green referred to the incident which occurred on Tuesday in the High Court of Justice, when Mr. Justice Eve, in approving a petition for the reduction of the capital of the British Dyestuffs Corporation, criticised the Government's policy in investing national funds in what he called rotten undertakings. The million pounds which the Government had spent in helping to establish a national dyestuffs industry was not much to spend on an industry on which national safety might depend, when a single battleship cost us five million pounds, especially as the dyestuff industry was now definitely established.

Professor Desch on Crystal Growth

CERTAIN anomalies of crystal growth which did not yet lend themselves to quantitative explanation were discussed by Professor C. H. Desch, on Tuesday, March 23, in the second of two lectures on "The Growth of Crystals," delivered at the Royal Institution.

Well-developed crystals, said Professor Desch, were usually formed by comparatively slow rate of growth. When growth was rapid, growth tended to be limited to the angles, and finally the crystal assumed a star shape. This was the origin of dendritic crystals. If the rapid crystallisation secured in a solution made viscous by addition of gum or gelatin, the effect was heightened. Dendritic crystals occurred in the crystallisation of glasses and glassy rocks, and also in metals, though in the latter viscosity was not a factor. The separation of crystals from solid solution was important in metallurgy. The new crystals tended to arrange themselves parallel with the chemically important planes of the old.

Regularly curved crystals were rare, twisting being observed in some native forms of quartz and stibnite. This was different from the production of hemispherical shells, observed by Stead in an alloy of tin, antimony and arsenic. Each crystal here formed a shell. The crystals were not truly curved, being probably made up of a large number of steps, each step being a small true crystal.

The phenomenon of periodic crystallisation occurred, for example, on cooling a thin layer of salol spread on a slide and melted. The crystals grew in needles, and the advancing point of the needle, contracting on solidification, left a gap in front of it. Growth then ceased till liquid flowed in, and hence the growth of the needles was intermittent and the crystals were marked by transverse growth lines. With potassium dichromate growing from its hot aqueous solution by evaporation of a very thin layer, a series of concentric rings were formed. This effect was probably connected with supersaturation. Closely connected with this phenomenon were Liesegang's rings, which were formed by the periodic precipitation of a solid, such as silver chromate, in a jelly.

Chemical Engineering Group

Papers on Lubricants and Bearings

AT a meeting of the Chemical Engineering Group of the Society of Chemical Industry, on Wednesday, March 24, at Burlington House, several papers were read.

In his paper on the "Commercial Aspect of Roller Bearings," Mr. R. Amberton stated that roller bearings, used instead of ordinary bearings, effected a saving of anything from 20 per cent. upwards in power consumption, the saving sometimes rising as high as 90 per cent. in the case of installations running long hours on very light loads. Considerable savings in time and cost were also effected as regards lubrication. Roughly speaking, if the total power bill per annum amounted to five times the cost of fitting roller bearings, then it was worth while to put them in, as they would probably pay for themselves within twelve months on power saving alone. Slides were exhibited showing how a split roller bearing could be assembled on an existing shaft, it not being necessary to dismantle the whole transmission system in order to convert existing shafting roller bearings.

"Ball and Roller Bearings: Characteristics Affecting their Practical Application and Use," by Mr. R. Allan, gave a detailed account of the subject, discussing typical bearing designs, cages or separators, friction, effect of fit, lubrication, and fatigue and life.

Lubricating Oils

Mr. J. E. Hackford, in his paper on "Some Characteristics of Lubricating Oils," discussed the causes underlying the deterioration of these oils. An abrasive action of oils on metallic surfaces in contact with them might be due to solid abrasive matter present in crude (including fuel) oils. The acidity of lubricating oils resulted in the pitting of cylinders, pistons, etc., in Diesel engines and of the shafts in Parsons turbines. Different lubricating oils increased in acidity value at different rates when oxygen was passed through them at 150° C. It was important that lubricating oils should, if possible, be kept absolutely dry, as the acids present would not then, presumably, be able to attack the metals of the shaft or bearings. With regard to turbines, where the oil was wet, the water should be free from dissolved salts, and oxygen should be obviated from the boiler feed water by expelling the dissolved gases from it by heating it to the highest possible temperature before pumping it into the boiler; otherwise this oxygen tended to cause acid formation in the oil. In the case of internal combustion engines, the oil should be kept hot and dry, being constantly circulated in a centrifuge, and the piston rings being kept tight, to prevent the wet and acid products of combustion from passing them. Recovered spent lubricating oils showed deterioration or fatigue owing to increase in their aspaltum content.

In "The General Properties of Lubricating Oils and Their Practical Application," Dr. A. E. Dunstan and Mr. R. W. L. Clarke gave an account of the mineral lubricating oils, including their manufacture from petroleum, nomenclature, and general physical and chemical properties. The work of Hardy and Doubleday on boundary lubrication, and the views of Langmuir on lubrication and allied matters were summarised. Possibly the lubricating power of oils was connected with the fact that they showed iso-colloidal properties, iso-colloids being a class in which the disperse phase and dispersion medium possessed the same chemical constitution.

Chemical Trade Prices for 1925

Variations and Current Market Quotations

THE annual market report, issued in pamphlet form by the Barter Trading Corporation, London, contains a list of 276 industrial chemicals, in respect of which in tabular form it gives the commercial name of the product, market report and observations, variations in prices between highest and lowest, and the current price at January, 1926. It is a useful record in a convenient form for reference. The year 1925 was a difficult period for market forecasts, but the company are satisfied with the results and have less hesitation in offering opinions respecting 1926 as many factors in the general trade position are more clearly defined.

For example, a bumper cotton crop of roughly 16,000,000 bales in the United States, increases in other cotton-growing countries, and reductions in the price of raw cotton to less than 1s. per lb.—a mark long hoped for—have had a stimulating effect in Lancashire and other textile centres; and although the industry there is still quiet, signs are not wanting that a revival may be looked for. Germany has been enabled to raise loans in Britain and America, thus financing successfully her industrial developments. The stabilisation of the mark on a gold basis and the obligations fulfilled under the Dawes reparation scheme have also contributed to an improved undertone. Her industries are running efficiently and economically, and all classes are imbued with a spirit of "work and produce." Italy and Belgium have both become important factors in world trade, their factories working at high pressure and unemployment being negligible. France at the moment is suffering on account of political instability and over-spending. The sooner she settles down to the things that matter, including a balanced budget, industrial concentration, and a fair settlement of her financial responsibilities to creditor nations, the sooner will she take her place again amongst prosperous nations. The latest investigations by the chairman of the company (Sir William Alexander, M.P.) of conditions in America reveal prosperity and confidence in every direction. The volume of trade in 1925, as measured by the tonnage carried by the railroads and payments through banks, has been the largest ever known. 1926 in America opens favourably. The manufacturing industries are generally prosperous, consumers' goods generally are in strong demand, and there is full employment for the wage-earning classes at good wages. This position should have a beneficial effect on British-American trade.

Prospects for 1926

With confidence restored and combined national efforts towards praceful post-war reconstruction, 1926 should show a considerable improvement on 1925, subject, so far as Britain is concerned, to fair and reasonable settlements of impending disputes in the coal trade, and a determined effort by employers and employees to work in harmony for the production of commodities as efficiently and cheaply as any competitor nation seeking world trade. Greater demand for chemicals in 1926 should stimulate production, and the increased output should assist in counteracting any tendency towards material increases in prices, although there may be exceptions where supplies are more or less limited. Generally, we do not expect to see much movement up or down in the main chemicals and raw materials. There may, however, be times when markets are caught short temporarily, and whilst we do not recommend chemical buyers to speculate in purchasing far ahead, we do not favour running down working stocks to the danger limit. In addition to market reports and price lists, the company have issued during 1925, at the request of many clients, "The B.T.C. Weekly Bulletin" for chemical buyers. It has already proved successful and welcome in keeping chemical buyers at home and abroad up-to-date with prices, fluctuations, and market conditions, and it will continue to be mailed weekly to those interested.

As regards industrial chemicals and raw materials an improved demand for home and esport is apparent, and with a better outlook in iron and steel, electrical and engineering trades and textiles, including the new British artificial silk industry, the outlook is more encouraging. Prices generally should only be subject to comparatively small reductions, as they have now reached limits where there is little room left for serious cutting. Supplies and prices of coal tar products and intermediates in 1926 will be affected by the settlement of the impending strife in the coal mining industry. Prospects of an amicable settlement are more favourable. There is at present a steady and increasing demand for benzol, naphtha, cresylic acid, and pyridine. Carbolic acid is, however, in plentiful supply, and the demand is spasmodic. In regard to fertilisers, most nations are to-day paying increasing attention to the development of foodstuffs and grain production within their own territories by intensive cultivation. This is, and will continue to be, an important factor in the outlet for fertilisers of all classes. Sulphate of ammonia, notwithstanding the large production of synthetic material in Britain and Germany, is to-day in none too plentiful supply. Basic slag has also been in short supply. "We predicted," the company state, "in our last annual report that the competition from German methyl alcohol, produced synthetically, and acetone made in U.S.A. by fermentation process, would force the wood distillation plants to be put out of commission. This has actually taken place to a large extent, and it is difficult to see any hope for wood products at present."

Progress in British Dyes

Mr. E. Hickson Defends the Industry

MR. ERNEST HICKSON, president of the Society of Dyers and Colourists, gave some account of the success of the Society's new British Colour Index at the annual dinner of the Society in Manchester on Thursday, March 18, and also defended the industry against the attacks of critics.

They were satisfied from the reception of the Index throughout the world, he said, that it was very much appreciated by all technicians. Having put the matter in hand the Council were aware of their responsibility for its upkeep, and had decided in future to reprint the appendix in full rather than make corrections separately; and this would be done whenever it was considered necessary to produce an appendix.

Replying to criticisms, he said that it seemed to him that more blameworthy than what was called looseness of colours was the looseness of public talk about the industry. It was well known that the industry was probing deeper down into organic chemistry than probably any other. The dyemaker who discovered a new dye was no more responsible for its qualities than the discoverer of any other material. His dye, moreover, might be loose when applied to some materials and fast in others. The man in the street was very slow to realise the progress in an industry which he so little understood. The number of colours really fast in various ways was greater than ever before, and the textile people who were so fond of grumbling could get good colours to-day that none of their predecessors could obtain. He thought it time that the textile trade, through the textile societies and the new Textile Institute, should look into this question of colour fastness from a more scientific point of view than hitherto. The more they looked into the matter of cataloguing fastness, the more difficult it became.

The Society had recently been considering excellent reports from three commissions—one from textile chemists in Germany, one from the American Association of Textile Chemists, and one from the British Wool Research Association, and had come to the conclusion that it was most desirable to set up tests of an international nature by international agreement. The American and German commissions had signified their willingness to co-operate with them in that. The Society had therefore appointed a committee, and he hoped this beginning would have happy results.

A Knecht Memorial

After a reference to the death of Professor Knecht, Mr. Hickson announced that it had been decided, as a memorial, to institute a Knecht medal. This medal would probably be granted as an acknowledgment of work, and would, he hoped, be accompanied by a grant, though their present funds were not yet sufficiently large to provide it.

Principal Mouat Jones, of the College of Technology, while proposing the toast of the allied societies, referred gratefully to this proposal, and offered the assistance of the College in informing old students of it.

At the annual meeting of the Society, which preceded the dinner, the officers were re-elected, and the report and balance-sheet were adopted.

Chemistry of the Higher Fatty Acids

Professor Hilditch's Lecture at Liverpool

PROFESSOR W. H. ROBERTS presided at the final meeting of the Session of the Liverpool Section of the Society of Chemical Industry at Liverpool University on Friday, March 19, when members of the Manchester Section were also present. In the afternoon a large party were shown over the English Margarine Works at Broadgreen by Dr. Anderson and Dr. Van B. Gilmour.

Professor T. P. Hilditch delivered a lecture on "The Structural Chemistry of the Higher Fatty Acids," in the course of which the structure of these acids, especially oleic acid, was discussed from the standpoint that it was desirable, in the case of natural synthetic products of the type of fatty compounds, to employ reagents of as delicate a character as possible in attempting to elucidate questions of molecular structure, as illustrated by recent work on the subject. It was pointed out that, even in the simple addition of oxygen to the unsaturated linkage of oleic acid by very gentle oxidation, either of two different stereoisomeric dihydroxystearic acids might be exclusively produced according to the conditions employed.

Whilst alkaline permanganate solution or alkaline hydrogen peroxide converted oleic acid into a 9 : 10-dihydroxystearic acid, m.p. 132°, and elaidic acid into a 9 : 10-dihydroxystearic acid, m.p. 95°, concentrated hydrogen peroxide in acetic acid or acetone solution transformed oleic acid into the dihydroxystearic acid, m.p. 95°, and elaidic acid into that melting at 132°. The latter conditions of oxidation were also applicable to the esters and glycerides of the higher ethylenic acids, and high yields were obtained in all cases.

In view of the almost quantitative character of the oxidation effected by so mild an agent as hydrogen peroxide in acetic acid solution, the lecturer suggested that the product from this process was likely to be most directly connected with the original unsaturated acid, and that an intramolecular rearrangement or "Walden inversion" occurred during oxidation in alkaline media. Similar cases of stereoisomerism and intramolecular rearrangement arising from other acids of the oleic series were tabulated, and it was indicated that dihydroxy fatty acids were for several reasons not well adapted to serve in the identification of the oleic acids. It was stated that unsaturated glycerides could apparently be oxidised by hydrogen peroxide in acetic acid solution without disturbing the glycerine group, oleodipalmitin, for example, being converted into dihydroxystearo-dipalmitin. This afforded a new means of investigation of the class of mixed glycerides which were of great importance in edible fat technology. An account was given of work which was being carried out on the lines indicated.

Hurter Lecture by Dr. Armstrong

A vote of thanks to Professor Hilditch was proposed by the chairman, who said that Liverpool University was to be congratulated on having on its staff a gentleman of such eminent attainments as Professor Hilditch. The vote was seconded by Mr. L. Guy Radcliffe, President of the Manchester Section, after which a brief discussion was contributed to by Dr. E. F. Armstrong, Mr. John Allan, Professor E. C. C. Baly, and others.

It was announced that the Hurter Memorial Lecture would be delivered in October by Dr. E. F. Armstrong.

Flexible Couplings

FLEXIBLE and insulating couplings of a number of types, reversible and non-reversing, are described in a booklet issued by the manufacturers, Crofts (Engineers), Ltd., of Thornbury, Bradford, who will forward copies of the booklet on request. The range covers all classes of loads, and the couplings are designed to deal effectively with mal-alignment, shock loads, end thrust, vibration, and insulation. Couplings are described suitable for general industrial purposes; for special purposes in connection with rolling mills, pumps, gas and oil engines, steam and water-turbines, etc.; for fractional horse-power and light loads, such as small generator sets, vacuum blowers, washing machines, etc.; and a very large number of other purposes.

Chemical Matters in Parliament

Unemployment in Glass Industry

Mr. Hannon (House of Commons, March 23) said that unemployment was very great in the glass trade, and asked that the industry might be assisted in view of competition from countries where production costs were lower.

Mr. Samuel said that applications for safeguarding could only be made in accordance with the White Paper.

Chemicals in Flour

Sir K. Wood (House of Commons, March 23), in reply to Mr. Harland, said that the Bread Acts made it an offence to put into flour anything other than the real produce of the corn or grain. It was doubtful whether this would be held to prohibit the use of gases for bleaching. A Departmental Committee was considering the desirability of prohibiting or restricting the use of chemicals in flour. In a later reply he said that there was no evidence to show that the use of chemicals was responsible for bakers' itch.

Methylated Spirit Figures

Mr. A. M. Samuel (House of Commons, March 23), in reply to Mr. Hardie, said that he had no information as to sales of methylated spirits, but in November 750,000 proof gallons of spirits were delivered for methylation in the U.K., in January 723,000 proof gallons, and in February 726 000 proof gallons. The wholesale price of industrial methylated spirit, 64 per cent. over proof, was at the rate of 2s. 5d. per gallon, and that of mineralised methylated spirit of the same strength 3s. 8d. per gallon, throughout that period.

Lime Supplies

Sir J. Gilmour (House of Commons, March 23), in reply to Sir A. Sinclair, said that the question of assistance in the provision of lime was under consideration, but no decision had yet been reached. Looking to the condition of the lime kilns at Eriboll, and the high cost of restarting them, and to the fact that it had been decided to offer the Eriboll property for sale, he did not propose to develop these kilns.

Petroleum Technologists' Annual Meeting

THE Institute of Petroleum Technologists held its annual meeting at the Royal Society of Arts, London, on Tuesday.

Sir Thomas Holland was re-elected president, and the following vice-presidents were re-elected :—Viscount Cowdray, Sir J. Cargill, Messrs. A. C. Adams, A Duckham, A. W. Eastlake, R. Redwood. Dr. W. R. Ormondy was elected a vice-president. To the Council Sir R. W. Barnett and Mr. A. Campbell were re-elected, and Mr. A. Beeby Thompson and Dr. F. B. Thole were elected. Membership stood at 796—an increase of 67.

Sir Thomas Holland, in his presidential address, said that after a period of twelve years the Institution had consolidated its position and had proved itself to be unique in its aims, so much so that the sales of its journal to outsiders produced a revenue of over £500. Their work was studied all over the world. He reviewed the aims of the founders of the Institution, and said that just as in the early days of recruiting, hardly a chemical engineer, still less a petroleum technologist, was turned out by the universities; so to-day there was enormous scope in the chemical aspects of the industry. A chemist with special knowledge of petroleum should be attached to each oil refinery.

In a review of training facilities, Sir Thomas paid tribute to the early work of Sir John Cadman at Birmingham, and to the present activities of Professor A. W. Nash at the same University. He also outlined the activities at South Kensington, and said that both courses were handicapped by the absence of near oil fields. He knew of no other similar courses in any of the world's universities. While other older professions had attained a standard of registration and qualification before practising, their young profession was gradually working towards that end—the essential qualifications to be age, scientific foundation, and practical experience.

A discussion of Dr. Wade's paper on "The Search for Oil in Australia," presented at a previous meeting, followed, and a communication was read from Mr. Cunningham Craig, in which he stated that bitumen was found along the shores of S.W. Tobago. Possibly it came from submarine oil seepages off the east coast of Trinidad.

From Week to Week

ADDITIONAL RETORTS are to be installed at Grangemouth gas-works because Scottish Dyes, Ltd., make unexpected and large demands, sometimes drawing off a third of the total gas production.

THE BRITISH SUGAR BEET SOCIETY has awarded the Mason Challenge Cup this year to Mr. P. Last, Eye, whose crop had an average yield of 17·95 tons per acre and 17·9 per cent. average sugar content.

MR. J. J. GREEN, chemistry master at Lincoln Municipal Technical School for 28 years, will retire on pension at the end of the summer term. He was previously a science master at Ashville College, Harrogate.

THE PREMIER in the House of Commons on Thursday, March 18, announced that on March 29 a Cash on Delivery postal service would be instituted—the minimum C.O.D. prepaid fee to be 4d. and the maximum value of goods accepted to be £40.

SIXTY YEARS' ASSOCIATION with the chemical trade has now been completed by Mr. J. E. Davidson, of Newcastle, director of the United Alkali Co., Ltd. He entered the office of the late Mr. Ailhusen in March, 1866, and was one of the original managing directors of the company.

TAARFARBEN A. G. is the name of a new Zurich concern formed with a capital of 500,000 Swiss francs to act as sole agent in Switzerland for products of I. G. Farben-industrie A. G. This concern is to market "Motyline" an anti-knock motor fuel containing about 1 per cent. of iron carbonyl.

CAPTAIN F. E. GUEST, M.P., has been elected to the board of the Cellulose Holdings and Investment Co.; the board has now been reconstituted as follows:—Mr. A. Loewenstein, chairman; Mr. J. G. Raphael, deputy-chairman; Captain F. E. Guest, Mr. Arthur Kemp and Mr. G. Popelier.

A JUNIOR ASSISTANT (CHEMIST) is required at the Building Research Station, Garston, near Watford. Candidates should have an honours degree in chemistry. An assistant is required for research work on miners' electric lamps under the Mines Research Board. Details of both these vacancies will be found in our advertisement columns.

SIR ALFRED MOND has contracted a chill which has affected his throat, and he has remained indoors for some days. Mr. H. Mond took Sir Alfred's place at the annual dinner of the Imperial Institutes' Club in London on Tuesday. He opened a discussion on "Industry the Relief of Unemployment," and suggested that benefits should be used for procuring trade and employment.

GERMANY'S OUTPUT OF SYNTHETIC METHANOL for 1926 is estimated at 25,000 tons, according to reports reaching Washington from Germany. Future production will probably reach 25,000 tons. Present production is confined to the Merseburg plant, but other units are to be opened at Oppau and at Ludwigshafen. The great bulk of the German product is being used for dyestuffs and synthetic resins.

PROFESSOR WILFRED SADLER, University of British Columbia Department of Dairy Chemistry, has been awarded by the International Educational Board of New York a Fellowship of $2,000 expenses to and from Europe, and tuition and laboratory fees while studying in Europe. Professor Sadler hopes to leave for Europe in May on one year's leave of absence and will work for three or four months in each of several leading laboratories.

SYNTHETIC NITROGEN is to be produced in New South Wales. The company responsible for the enterprise is the Nuske Power, Fuel and Nitrogen Co., Ltd., an Anglo-German concern. No capital is being sought in Australia. It is stated that a German process will be adopted and that work will be found for 3,000 men, to be increased to 30,000 when the ten units are completed. A land company will also be floated to build garden villages for the employees.

UNEMPLOYED INSURED WORKERS in the chemical manufacturing industry at February 22 totalled 8,172—7,123 men and 1,049 women. In paint, varnish, etc., manufacture equivalent figures were 735 men and 157 women—total, 892. During February disease of occupation reported included 27 cases of lead poisoning (2 fatal), 16 cases of epitheliomatous ulceration (3 fatal), and two cases of chrome ulceration. There were two fatal accidents in the chemicals, etc., industry during February, and four in the textile dyeing and bleaching industry.

THE CHANDLER GOLD MEDAL for 1926 has been awarded by Columbia University to Professor S. W. Parr, professor of applied chemistry in the University of Illinois, "in recognition of distinguished achievement in chemical science." He will deliver the annual Chandler lecture on April 23, on "The Constitution of Coal." Professor Parr has directed coal and water surveys for state and federal services, and was a member of the American Engineering Council's Coal Storage Committee which conducted a national investigation of the coal storage situation.

THE BRITISH OXYGEN CO. and Allen-Liversidge, London, have taken over the Jarrow and Cardiff works of Hopco (Hydrogen, Oxygen, and Plant), Ltd. The company will continue to operate their South African works.

THE AUSTRALIAN COMMONWEALTH INSTITUTE of Science and Industry is to be reorganised on the lines of the Department of Scientific and Industrial Research. Exchange of research officials between the two countries is suggested.

THE FRANKLIN INSTITUTE proposes to award John Price Wetherill silver medals to Frank Twyman, London, for his Hilger interferometer and to the Wagner Electric Corporation, with special mention of Val. A. Fynn and H. Weichsel for the Fynn-Weichsel motor.

A LARGE DEPOSIT OF GYPSUM of extremely fine quality has been discovered at Moose River, Ontario. One Canadian company has offered to contract for 2,000 to 20,000 tons of gypsum daily and to provide ample guarantee that it will carry out any agreement with the Government into which it may enter.

PROFESSOR A. SOMMERFELD, Munich University, lectured at Manchester University on "The periodic system, chemical bonds, and crystal structure." Dr. Levinstein presided. The Professor is giving a series of lectures, including three at London University, and one each at Oxford, Cambridge and Edinburgh.

SIR MAX MUSPRATT has now been officially appointed president of the Federation of British Industries. He said at the meeting last week that he felt the coal industry would find its way out of immediate difficulties and in due course arrive at a state of prosperity that its enormous services to the country justified it in expecting.

THE ANNUAL EXHIBITION of the Liverpool College Chemistry Society was held on Saturday, March 20. Professor W. H. Roberts judged the exhibits and awarded the first prize to E. L. Figgis for compounds of aluminium, and the second to H. C. Mace for a demonstration of flame phenomena. Honourable mention was made of G. H. Frazer (colloids) and W. R. Hardwick (optics).

THE BUILDING OF AN ADDITIONAL WORKS of the Hull Fish Meal and Oil Co., Ltd., has been approved by the Hull Corporation. Premises will be erected at a cost of £15,000 near Albert Dock for the manufacture of fish meal and guano. Increased trade is responsible for these developments. Special plant will be installed to prevent nuisances which sometimes arise in this industry.

A NEW SWEDISH COMPANY, Aktiebolaget Kraftmetall, has been founded, with the participation of German capital, to exploit the invention of a German engineer, Herr Kolb, to produce an exceptionally hard metal suitable for the manufacture of grinding and other tools. The new metal, which is stated to maintain its qualities up to 3,000 degrees Celsius, is produced by an electro-chemical method.

AT BOW COUNTY COURT, on Monday, Lawrence William Codd, of Weaverham, Cheshire, employed by Brunner Mond and Co., in a technical capacity, sued J. Silver, of Forest Gate, E., to recover £11 5s. damage to his motor in Whitechapel Road. There was a counter-claim for £4 by the defendant for damage done to his car. Judge Snagge decided in favour of the plaintiff, and gave him a verdict for £10 1s. and costs, and the counter-claim was dismissed.

THE ANNUAL DINNER of the Imperial College Association, in connection with the Imperial College of Science and Technology, which embraces the Royal College of Science, Royal School of Mines, and City and Guilds (Engineering College), was held on Monday in London. Lord Buckmaster presided. Among those who accepted invitations were:—Professor W. A. Bone, Professor H. B. Baker, Sir John Brunner, Sir John B. Farmer, Dr. H. S. Hele-Shaw, Sir Thomas Holland, Sir Frederic Nathan, Sir Joseph Petavel, Sir John Russell, and Professor W. W. Watts.

THE ANNUAL MEETING of the Birmingham and Midland section of the Society of Chemical Industry was held last week, Mr. J. C. Mann was elected chairman, Mr. George King was reappointed hon. secretary and the following were elected to the Committee:—Professor W. Haworth, Professor of Chemistry, The University; Dr. E. D. Mason, director of Belcher and Mason, Ltd.; Dr. C. A. Fox, chemist, Chance and Hunt, Ltd., and Mr. W. C. Davis, chemist, British Cyanides, Ltd. It was stated that the number of members had fallen during the year to 185 due largely to removal of older members from the district. The Council had decided to admit new members without payment of entrance fee.

THE VITALITY OF THE GAS INDUSTRY at a time when there was talk of "the electric age" was emphasised on Tuesday at the opening of the new showrooms of the Gas Light and Coke Co., in Horseferry Road, Westminster, on the site which saw the start of the first gas company in the world in 1812. To-day the company had 1,100,000 consumers throughout an area of 265 square miles of London and its environs, and despite the competition of electricity, the gas industry as a whole had seen in the last three or four years the greatest expansion in its history. Concurrently with the growth of gas-cooking and heating apparatus, the sootfall of London since 1903 had decreased by more than 50 per cent., and the hours of sunshine increased by a corresponding amount.

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ANALYSIS.—The determination of calcium by the conversion of the oxalate to the carbonate. H. W. Foote and W. M. Bradley. *J. Amer. Chem. Soc.*, March, 1926, pp. 676–678.

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Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each

Abstracts of Complete Specifications

247,296. TITANIUM PIGMENTS. C. Weizmann and J. Blumenfeld, 16, Addison Crescent, London, W.14. Application date, July 12, 1922.

This process is for treating titanium oxide to improve its qualities as a pigment. It has been found that the variability of pigment qualities of different titanium oxides is connected with the size of the particles from which the oxide is formed. These particles must be small, but they must also be of different sizes. Good results are obtained when the particles are in such proportions and sizes that the spaces between the larger particles is practically filled by the smaller. If the smaller particles are ultra-microscopic, the paint which is obtained by mixing with linseed oil is exceptionally adhesive. Colloidal compounds having these properties are obtained by the peptisation of titanic acid obtained by hydrolysis. The dispersion is effected by means of small quantities of acid or alkali, or salts of titanium, or any substance which diminishes the surface ten ion of the liquid phase. The products have all the properties of colloidal solutions, and can be dried and then powdered, the powder being used in the manufacture of paints. Such compositions do not change colour on exposure to light. Examples are given of the treatment of TiO_2 in the form of metatitanic acid precipitated by hydrolysis, with ammonia to neutralise the acid present, and then with hydrochloric acid, titanium chloride, or silicon chloride. The products may be mixed with other pigments.

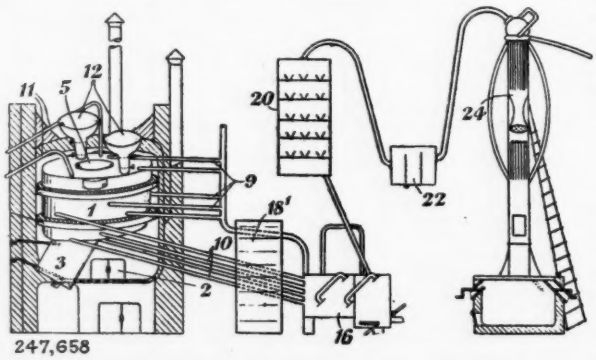
247,639. CARBONACEOUS MATERIAL, APPARATUS FOR THE DISTILLATION OF. O. H. Hertel, 230, South Clark Street, Chicago. Application date, November 13, 1924.

A vertical retort for distilling coal in batches is provided with a hollow member passing vertically through it and containing gas burners for heating. The hollow member is of oval section and is rotated to exert a lateral pressure on the charge so as to form passages through which gas may escape. The retort bottom may be raised to retain the charge or lowered to discharge it. A weight is placed on the top of the charge in the retort.

247,644. LEAD CHAMBERS EMPLOYED IN THE MANUFACTURE OF SULPHURIC ACID. W. G. Mills and Packards, and James Fison (Thetford), Ltd., Duke Street, Ipswich. Application date, November 17, 1924.

The gases are admitted to these lead chambers through a tangential pipe near the bottom, the chamber being circular, and withdrawn through another pipe still nearer the bottom.

247,658. DISTILLATION OF OIL-BEARING MATERIALS, APPARATUS FOR. L. de Hernandez, 950, Callao Street, Buenos Ayres. Application date, November 19, 1924.



247,658

A retort 1 is arranged in a furnace 2 and is provided with a discharge extension 3 and a central passage 5. Discharge pipes 9, 10 are provided for distillates of different densities, and gases are discharged through a pipe 11. Schist or like material is supplied through hoppers 12, and is heated by hot gases round the retort and also in the conduit 5. The distillates pass through a cooler 18¹ to a receiver 16. Vapour passes to a purifier 20 and dehydrating chamber 22 and then to a fractionating column 24.

247,714. SULPHONATED PRODUCTS OF WOOL FAT, PROCESS OF OBTAINING. O. Herzog, 16, Faradayweg, Berlin-Dahlem, Germany. Application date, January 10, 1925.

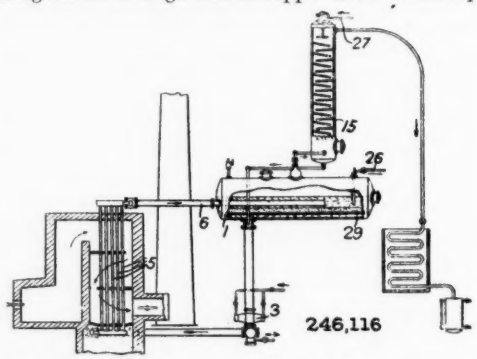
It has been found that the separate fractions of wool fat give different results on treatment with concentrated sulphuric acid. Those of low melting point are sulphonated but those of higher melting point are oxidised and not sulphonated. Wool fat is dissolved in acetone or benzene and then cooled, when the hard fat separates out first, and the soft fat is then separated from the solvent in vacuo. The two portions are treated separately with sulphuric acid, yielding products which yield water emulsions of great stability.

NOTE.—Abstract of the following specification which is now accepted, appeared in THE CHEMICAL AGE when it became open to inspection under the International Convention:—230,821 (Sun Oil Co.), relating to mineral oil distillation, see Vol. XII, p. 508.

International Specifications not yet Accepted

246,116. CRACKING HYDROCARBONS. Sinclair Refining Co., 45, Nassau Street, New York. Assignees of E. C. Herthel and H. L. Pelzer, 111, West Washington Street, Chicago. International Convention date, January 17, 1925.

Carbon deposits on the heating surfaces are prevented by circulating the oil through iron or copper oxide which separate



246,116

the deposit-forming substances. The oxide may be supported on a bed of filtering material such as asbestos, sil-o-cel, fire-brick, sand, kieselguhr, pumice, glass, mineral wool, coke charcoal, fuller's earth, absorbent clay, or silica gel. Oil passes from a drum 1 through a pump 3 to a tubular heater 5, the metal oxide being supported on a screen 29. Vapour passes into a reflex tower 15, where it is treated by incoming fresh oil. The oil residue is drawn off by a pipe 26.

246,126–7. CONDENSATION PRODUCTS FROM FORMALDEHYDE AND UREA. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, January 17, 1925.

246,126. Urea or thiourea and formaldehyde or a polymer are condensed at a raised pressure and temperature above 100° C. A condensing agent may or may not be used, and the reaction medium may be basic, neutral or acid. Hexamethylene-tetramine and glacial acetic acid are mentioned as additions. The products may be used as lacquers or impregnating materials, and may be mixed with fillers or cements.

246,127. Condensation products of formaldehyde and urea which are insoluble or gelatinous are rendered soluble by heating with an excess of formaldehyde, if necessary under pressure and above 100° C. If the material has been hardened by excess of acid, the formaldehyde is neutralised with bases. The excess of formaldehyde can be distilled off or urea added to condense with it.

246,128. PHOSPHORIC ACID. I. G. Farbenindustrie Akt.-Ges., 31, Gutleutstrasse, Frankfort-on-Main, Germany. Assignees of Chemische Fabrik Griesheim-Elektron, 31, Gutleutstrasse, Frankfort-on-Main, Germany. International Convention date, January 17, 1925.

Phosphorus is burned in a vertical shaft or in a horizontal rotary tube, the walls of which are irrigated with phosphoric acid solution to protect them and secure partial absorption of the combustion product.

246,142. SOLUBLE SALTS OF ORGANIC ACIDS; SOAPS; FLUORIDES AND COMPLEX FLUORIDES. M. Buchner, 1, Schellingstrasse, Kleefeld, Hanover, Germany. International Convention date, January 16, 1925.

To obtain soluble salts of fatty acids, the acid or ester is treated with an oxide or carbonate of calcium, magnesium, lead or zinc to obtain an insoluble soap, and the latter is then treated with a fluoride, or complex fluoride, such as sodium silicofluoride or borofluoride. A soluble soap is obtained, and an insoluble fluoride which may be treated with silicon fluoride and sodium chloride in presence of acid to obtain sodium silicofluoride. This may be heated to recover sodium fluoride, and the calcium or other chloride which was also obtained may be treated with ammonia and carbon dioxide to obtain ammonium chloride.

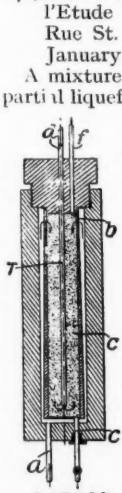
Sodium fluoride can also be treated with calcium cyanide to obtain sodium carbonate, ammonia, and calcium fluoride, and the latter then treated with silicon fluoride and sulphuric acid to obtain hydrofluosilicic acid. This may be used to obtain the free organic acid from its metal salt, and also a silicofluoride which can be treated with sodium chloride to obtain sodium silicofluoride. The reactions are effected with little or no solvent, and under pressure at 40°-100° C.

246,156. ANTHRACENE-2 : 1-THIOINDOXYL. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, January 14, 1925.

To obtain anthracene-2-thioglycollic acid, 2-mercaptoanthracene is condensed with chloracetic acid in alkaline solution, or anthraquinone-2-thioglycollic acid is reduced with zinc dust and ammonia. The anthracene-2-thioglycollic acid may be converted into its acid chloride by means of phosphorus pentachloride or thionyl chloride and ring closure then effected by means of an acid condensing agent such as aluminium, ferric, or zinc chloride, to obtain anthracene-2 : 1-thioindoxyl.

246,168. FORMATES. Soc. l'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude, 48, Rue St. Lazare, Paris. International Convention date, January 17, 1925.

A mixture of nitrogen and hydrogen which is obtained by partial liquefaction of water gas may be freed from its carbon monoxide by absorption in concentrated alkaline solution under such pressure that the solution is at about its critical temperature. The nitrogen-hydrogen mixture is then used for ammonia synthesis. The alkaline solution passes into a pressure vessel through a pipe *a* and then through an opening *b* to an inner vessel C. The compressed gas enters by pipes *d*, T, and passes through filling material in the vessel C in counter-current to the solution, finally escaping by pipe *f*. The temperature of the apparatus is controlled by external electrical heating devices. The tube T and inner wall of the reaction chamber are of copper, and the outer vessel of nickel steel. With concentrated alkali solutions, a pressure of 400 atmospheres and temperature of 300° C. are employed, and the carbon monoxide is continuously removed. Carbon monoxide can be removed from water gas by the use of more concentrated solutions, and pressures similar to those employed in ammonia synthesis.



246,168

246,177. CYANIDES AND AMMONIA. Gewerkschaft Sachsen-Weimar, Unterbreizbach-on-Rhine, Germany. International Convention date, January 17, 1925.

Nitrogen, with or without other gases such as producer gas, reacts with a mixture of an alkali or alkaline earth sulphate or sulphide, limestone and a reducing agent, or calcium sulphide and a reducing agent, with or without a catalyst such as iron, at 800°–1,000° C., yielding cyanides with some ammonia. The mixture may be heated externally, or internally in contact with a reducing flame. If steam is blown through, ammonia is obtained. In an example, potassium sulphate, coal, and lime or calcium sulphide, are treated with nitrogen or producer gas.

246,181. DIAZO COMPOUNDS; DYEING. I. G. Farbenindustrie Akt.-Ges., 31, Gutleutstrasse, Frankfurt-on-Main, Germany. Assignees of Chemische Fabrik Griesheim-Elektron, 31, Gutleutstrasse, Frankfurt-on-Main, Germany. International Convention date, January 19, 1925.

Diazo preparations containing neutral or acid salts of 1 : 5-naphthalene-disulphonic acid with diazonium compounds of unsulphonated substituted aromatic amines are used in forming insoluble azo dyes on the fibre. The acid diazonium salts may be mixed dry with a base such as magnesium oxide, zinc oxide, calcium hydroxide, or alkali carbonate or bicarbonate when neutral solutions are required. The diazonium salts of 1 : 5-naphthalene-disulphonic acid are obtained by double decomposition of aqueous acid diazo solutions with metal salts of the disulphonic acid. An example of a diazo preparation comprises neutral salts of 1 : 5-naphthalene-disulphonate of *o*-chlordiazobenzene, aluminium sulphate, and sodium benzene sulphonate.

LATEST NOTIFICATIONS

249,091. Process for treating soda solutions contaminated with cellulose-like bodies. Soie D'Aubenton. March 11, 1925.

249,099. Manufacture of a vat dyestuff. Soc. of Chemical Industry in Basle. March 10, 1925.

249,101. Manufacture of condensation products from urea or its derivatives and formaldehyde. Soc. of Chemical Industry in Basle. March 10, 1925.

249,109. Method of and apparatus for refrigeration. Silica Gel Corporation. March 11, 1925.

249,111. Process for obtaining phenols from ammoniacal liquor or industrial waste liquors. Stinnes, Z. M. March 13, 1925.

249,113. Aldehyde amine condensation products and process of preparing same, and their use in the vulcanisation of rubber substances. Grasselli Chemical Co. March 13, 1925.

249,140. Manufacture of solid products containing nicotine. Chemische Fabrik auf actien vorm. E. Schering. March 14, 1925.

249,147. Manufacture of halogen-dibenzpyrene-quinones. I. G. Farbenindustrie Akt.-Ges. March 14, 1925.

249,155. Production of liquid organic compounds from coal, tar, and the like. I. G. Farbenindustrie Akt.-Ges. March 14, 1925.

249,156. Manufacture and production of liquid organic compounds. I. G. Farbenindustrie Akt.-Ges. March 14, 1925.

249,160. Manufacture of dyestuffs of the triaryl-methane series. I. G. Farbenindustrie Akt.-Ges. March 14, 1925.

Specifications Accepted with Date of Application

226,492. Perylene, Process for the manufacture of. W. Carpmael. (*Compagnie Nationale de Matières Colorantes et Manufactures de Produits Chimiques du Nord Reunies, Etablissements Kuhlmann*). September 2, 1924.

231,900. Purifying mineral oils and like hydrocarbons after their treatment with acid, Processes for. Akt.-Ges. für Chemiewerte. April 5, 1924.

233,316. Sodium sulphide or similar inorganic fusible chemicals in the form of small lumps, Process for the preparation of. Chemische Fabriken Kunheim and Co. Akt.-Ges. May 1, 1924.

237,920. Purifying gases, Method and means for. Humphreys and Glasgow, Ltd. August 1, 1924.

238,205. Separation of lead and tin in tin-containing ores, Process for. Consortium für Nassmetallurgie. August 8, 1924.

238,543. Converting hafnium and zirconium phosphates into other hafnium and zirconium compounds, Process for. Naamlooze Vennootschap Philips' Gloeilampenfabrieken. August 13, 1924.

248,411. Dyestuff intermediates, Manufacture of. J. Thomas and Scottish Dyes, Ltd. September 8, 1924.

248,424. Sulphur dyestuffs fast to chlorine, Process for producing. S. Sokal. (*Kalle and Co. Akt.-Ges.*) November 1, 1924.

248,453. Glutamic acid and salts thereof, Manufacture of. K. Ikeda. December 3, 1924.

248,477. Artificial resins, Manufacture of. British Cyanides Co., Ltd., and E. C. Rossiter. December 5, 1924.

248,487. Bluish green dyestuffs and colour lakes, Manufacture of. O. Y. Imray. (*Farbwerke vorm. Meister, Lucius, and Brüning.*) December 9, 1924.

248,513. Distilling petroleum oils and other liquids under high vacuum, Processes and apparatus for. O. Y. Imray. (*Zieley Processes Corporation.*) December 24, 1924.

248,519. Vat dyestuffs, Process for preparing. S. Sokal. (*Kalle and Co. Akt.-Ges.*) December 30, 1924.

248,523. Monacyl derivatives of aminoarylarseno compounds, Process for the manufacture of. G. Newbery and May and Baker, Ltd. January 6, 1925.
248,593. Barium nitrate, Manufacture of. D. Tyrer. May 6, 1925.
248,633. Reduction of oxide ores. Y. A. Dyer. August 10, 1925.
248,683. Iron carbonyl, Manufacture and production of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*) December 14, 1925. Addition to 244,895.

Applications for Patents

Achille Serre, Ltd., Alliott, E. A., and Hatfield, A. E. Filtration. 7,794. March 20.
Aktiebolaget Separator. Centrifugal separators. 7,300. March 16. (Sweden, March 26, 1925.)
Appel, R. Electrolytic separation of metallic chromium. 7,668. March 19. (Germany, November 26, 1925.)
Bone, K. S. C. Production of active carbon. 7,676. March 19.
British Dyestuffs Corporation, Ltd., and Coffey, S. Manufacture of acylhalides. 7,151. March 15.
British Dyestuffs Corporation, Ltd., and Tatum, W. W. Anthraquinone dyestuffs. 7,663. March 19.
Bucherer, H. T. Production or development of azo dyes. 7,328. March 16. (Germany, March 17, 1925.)
Chemische Fabrik auf actien vorm. E. Schering. Manufacture of esters of isoborneols and borneols. 7,299. March 16. (Germany, April 11, 1925.)
Deguide, C. Purification of silicates of baryta. 7,529. March 18. (France, April 3, 1925.)
Dicker, S. G. S., and Metals Protection Corporation. Process of protecting iron, etc., articles against corrosion. 7,167. March 15.
Drescher, H. A. E., Harris, J. E. G., Scottish Dyes, Ltd., Thomas, J., and Wylam, B. Dyes and dyeing. 7,195. March 15.
Dreyfus, H. Treatment of cellulose derivatives, etc. 7,266. March 16.
Du Pont de Nemours and Co., E. I., and Marks, E. C. R. Recovery of antimony in manufacture of flavanthrone. 7,197. March 15.
Etablissements Poulene Frères. Manufacture of salts of alkaloids. 7,298. March 16. (France, March 28, 1925.)
I. G. Farbenindustrie Akt.-Ges., and Mond, A. Production of resinous condensation products from aromatic amines. 7,131. March 15.
I. G. Farbenindustrie Akt.-Ges. Manufacture of gaseous fuels. 7,149. March 15. (Germany, March 16, 1925.)
I. G. Farbenindustrie Akt.-Ges. Production of azo dyestuffs on silk. 7,577. March 18. (Germany, June 20, 1925.)
I. G. Farbenindustrie Akt-.Ges. Methods of separating constituents from a mixture. 7,580. March 18. (Germany, March 18, 1925.)
Institute of Metals, and May, R. Protection of copper alloys from corrosion by water. 7,452. March 17.
Meyerhofer, A. F. Production of complex hydrofluoric acids. 7,709. March 19. (Germany, April 1, 1925.)
Patart, G. Treatment of fuels for obtainment of by-products. 7,205. March 15. (France, March 21, 1925.)
Scottish Dyes, Ltd., Thomas, J., and Thomson, R. F. Dyeing artificial silks. 7,675. March 19.
Soc. of Chemical Industry in Basle. Manufacture of dyestuff preparations. 7,578. March 18. (Switzerland, March 20, 1925.)
Welch, A. P. Manufacture of carbon black. 7,111. March 15.
Wolf, K. Production of moulded silicic acid gel. 7,689. March 19. (Germany, March 21, 1925.)
Wyld, F. Lehnhoff-. Manufacture of organo-metallic combinations of sulpharsenol. 7,136. March 15. (France, March 17, 1925.)

Safeguarding the Spanish Dye Industry

A SPANISH Royal Order says that the Customs section of the Council of National Economy is to study means of encouraging and developing as far as possible the dye and explosive industry in Spain, and make proposals accordingly. Meanwhile, the Government prohibits temporarily the importation of the intermediate products and artificial organic colouring materials enumerated in the items 793, 794, 795, and 796 of the Customs Tariff, and establishes a system of import permits. Among the materials affected are nitrated and chlorated derivatives; nitro-aniline, nitrobenzol, nitrotoluol, chlorobenzol, chlorotoluol, etc.; paranitraniline, diphenylamine, alpha- beta-naphthol, and anthraquinone; artificial organic colouring materials (derived from coal and the like) in powder or crystals and in paste or solid form, containing at least 50 per cent. of water.

Latest Government Contracts

RECENT contracts placed by the various Government departments include the following:

Admiralty

CONTRACT AND PURCHASE DEPARTMENT.—Aluminium Ingots: British Aluminium Co., Ltd., London, E.C. Bottles, Oxygen Storage: Chesterfield Tube Co., Ltd., Chesterfield. Glycerine: J. Crosfield and Sons, Ltd., Warrington. Manganese Bronze Ingots: Manganese Bronze and Brass Co., Ltd., London, S.W.; J. Stone and Co., Ltd., London, S.E. Oil, Mineral: Anglo-American Oil Co., Ltd., London, S.W.; Silvertown Lubricants, Ltd., London, E.; W. B. Dick and Co., Ltd., London, S.W. Oil, Rapeseed: John L. Seaton and Co., Ltd., Hull. Plant, Oxygen Producing: Peter Brotherhood, Ltd., Peterborough. Varnishes: Blundell, Spence and Co., Ltd., Hull; R. J. Clark and Co., Ltd., London; Colthurst and Harding, Bristol; Cross, Sherwood and Heald, Ltd., Barking; Naylor Bros. (London), Ltd., Slough; Paripan, Ltd., Egham, Surrey; G. Purdom and Co., London, E.; Sissons Bros. and Co., Ltd., Hull; C. W. Waters, London, E.C.; S. Wills and Co., Ltd., Bristol.

War Office

Acid, Chlorosulphonic: United Alkali Co., Ltd., Widnes. Acid, Sulphuric: Spencer Chapman and Messel, Ltd., London, E.; Staveley Coal and Iron Co., Ltd., Nr. Chesterfield. Aluminium Ingot: The British Aluminium Co., Ltd., Warrington, Lancs. Cement, Portland: T. Beynon and Co., Ltd., Aberthaw; J. Board and Co., Ltd., Bridgwater; British Standard Cement Co., Rainham; W. Brown and Co. (Ipswich), Ltd., Claydon; G. and T. Earle, Ltd., Hull; Gardner and Greenshields, Glasgow, Grangemouth, Leith; Cement Marketing Co., Ltd.; Ship Canal Portland Cement Co., Ltd., Ellesmere Port; Thames Portland Cement Co., Ltd., Cliffe; Oxford Portland Cement Co., Ltd., Kirtlington, Oxford. Charcoal, Activated: Sutcliffe Speakman and Co., Ltd., Leigh, Lancs. Copper, Ingot: Marshall Bros. and Co., London, E.C. Cylinders, Iron and Drums Oil: F. Francis and Sons, London, S.E. Diphenylamine: British Dyestuffs Corporation, Ltd., Blackley, Nr. Manchester. Films, X-ray: Ilford, Ltd., London, E. Zinc: H. Gardner and Co., Ltd., London, E.C.

Air Ministry

Drums (Benzol): P. D. Mitchell, Ltd., Dundee. Tanks, Petrol, Portable: F. Braby and Co., Ltd., London, S.E.

Post Office

Spirit, Methylated: W. H. Palmer and Co., Ltd., London, E.C.

Crown Agents for the Colonies

Cement: Cement Marketing Co., Ltd., London, S.W.; T. Beynon and Co., Ltd., London, E.C. Lux Cell Spares: The Chloride Electrical Storage Co., Ltd., London, S.W. Metals: The Phosphor Bronze Co., Ltd., London, S.E. Novarsenobillon: May and Baker, Ltd., London, S.W. Oil: The Vacuum Oil Co., London, S.W.; C. C. Wakefield and Co., London, E.C. Paint: W. Carson and Sons, Ltd., London, S.W.; Wilkinson Heywood and Clark, London, W.C.; Locke, Lancaster and W. R. Johnson, London, E.C.; Torbay Paint Co., London, E.C. Petrol: F. and A. Swanzy, London, W.C. X-ray Apparatus: Watson and Sons, Ltd., London, W.C.

Chemical Engineering Catalogue

THE second edition of *The Chemical Engineering and Chemical Catalogue* has been published by Leonard Hill, 173, Fleet Street, E.C.4, at a selling price of 15s. annual subscription. That the publication meets a real need is obvious from the increase in volume over the first edition. Sir Robert Hadfield says in a foreword that it is designed to help the busy man. It is essentially a businesslike catalogue of chemicals and plant and their makers. The section of tables and data includes the chemical resistance of materials of construction, air filtration and spraying, and various other articles. There are table sections devoted to thermometry, specific gravity, etc., and general specifications for steam jacketed pans and filter plates and frames. It is altogether a practical and convenient reference book.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £37 per ton, Powder, £39 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORATE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3¾d. per lb.

SODIUM BISULPHITE POWDER 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

SODIUM CHLORATE.—3d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4⅞d. to 5d. per lb. Crude 60's, 1s. 5d. to 1s. 6d.

ACID CRESYLIC 97/99.—1s. 8d. to 1s. 9d. per gall. Pale, 95%, 1s. 6d. to 1s. 7d. per gall. Dark, 1s. 3d. to 1s. 4d. per gall. Steady.

ANTHRACENE.—A quality, 3d. to 4d. per unit.

ANTHRACENE OIL, STRAINED.—7d. to 8d. per gall. Unstrained, 6½d. to 7½d. per gall.

BENZOL.—Crude 65's, 1s. 2½d. to 1s. 3½d. per gall., ex works in tank wagons. Standard Motor, 1s. 9d. to 1s. 11d. per gall., ex works in tank wagons. Pure, 1s. 10d. to 2s. 2d. per gall., ex works in tank wagons.

TOLUOL.—90%, 1s. 9½d. to 2s. per gall. Pure, 2s. to 2s. 2d. per gall.

XYLOL.—2s. to 2s. 6d. per gall. Pure, 3s. 3d. per gall.

CREOSOTE.—Cresylic, 20/24%, 8½d. to 10d. per gall. Standard specification, middle oil, heavy, 6½d. to 7d. per gall.

NAPHTHA.—Crude, 9d. to 1s. per gall. Solvent 90/160, 1s. 5d. to 1s. 8d. per gall. Steady demand. Solvent 90/190, 1s. to 1s. 4d per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £3 10s. to £5 10s. per ton. Whizzed or hot pressed, £5 10s. to £7 10s.

NAPHTHALENE.—Crystals and Flaked, £11 10s. to £13 per ton, according to districts.

PITCH.—Medium soft, 85s. to 87s. 6d. per ton, according to district. Market active.

PYRIDINE.—90/140, 19s. 6d. to 21s. per gall. Firmer. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—7s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—8s. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—7d. per lb. naked at works.

ANILINE SALTS.—7d. to 7½d. per lb. naked at works.

BENZALDEHYDE.—2s. 1d. per lb. Good home inquiry.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

o-CRESOL 29/31° C.—3d. per lb. Demand quiet.

m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb. Demand moderate.

p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb. Demand moderate.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—1s. 11d. to 2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLANILINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d. Fair home inquiry.

B-NAPHTHOL.—11d. to 1s. per lb. d/d. Fair home inquiry.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d. Fair home inquiry.

B-NAPHTHYLAMINE.—3s. 2d. per lb. d/d. Fair home inquiry.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. 6d. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d. Fair home inquiry.

NITROBENZENE.—5d. to 5¼d. per lb. naked at works. Fair home inquiry.

NITRONAPHTHALENE.—10d. per lb. d/d.

R. SALT.—2s. 4d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8 15s. to £9. Firmer. Grey, £17 10s. per ton. Better inquiry. Liquor, 9d. per gall. 32° Tw.

ACETONE.—£81 per ton.

CHARCOAL.—£7 5s. to £9 per ton, according to grade and locality. Demand good.

IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.

RED LIQUOR.—9½d. to 1s. per gall.

WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 10d. per gall. 60% O.P. Solvent, 4s. 6d. per gall. 40% O.P. Very quiet.

WOOD TAR.—£3 to £5 per ton, according to grade.

BROWN SUGAR OF LEAD.—£40 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—5s. 3d. per lb.

ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

Acid, Acetic, 80% B.P.—£38 10s. to £39 per ton ex wharf London in glass containers.

Acid, Acetyl Salicylic.—2s. 4d. to 2s. 6d. per lb. Keen competition met. Good demand.

Acid, Benzoic B.P.—2s. to 2s. 3d. per lb., according to quantity.

Acid, Boric B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

Acid, Camphoric.—19s. to 21s. per lb.

Acid, Citric.—1s. 3d. to 1s. 4d. per lb., less 5%.

Acid, Gallic.—2s. 8d. per lb. for pure crystal, in cwt. lots.

Acid, Pyrogallic, Crystals.—6s. 7d. per lb. Resublimed, 7s. 3d.

Acid, Salicylic.—1s. 3½d. to 1s. 5d. per lb. Technical.—10½d. to 10¾d. per lb.

Acid, Tannic B.P.—2s. 10d. per lb.

Acid, Tartaric.—1s. 0½d. per lb., less 5%. Market firm.

Amidol.—6s. 6d. per lb., d/d.

Acetanilide.—1s. 7d. to 1s. 8d. per lb. for quantities.

Amidopyrin.—12s. 6d. per lb.

Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb., according to quantity.

Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.

Atropine Sulphate.—11s. per oz. for English make.

Barbitone.—10s. per lb.

Benzonaphthol.—3s. 3d. per lb. spot.

Bismuth Carbonate.—12s. 6d. to 14s. 3d. per lb.

Bismuth Citrate.—9s. 6d. to 11s. 3d. per lb.

Bismuth Salicylate.—10s. 3d. to 12s. per lb.

Bismuth Subnitrate.—10s. 9d. to 12s. 6d. per lb. according to quantity.

Borax B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

Bromides.—Potassium, 1s. 9d. to 1s. 11d. per lb.; sodium, 1s. 10d. to 2s. 2d. per lb.; ammonium, 2s. 3d. to 2s. 5d. per lb., all spot.

Calcium Lactate.—1s. 3d. to 1s. 5d.

Chloral Hydrate.—3s. 3d. to 3s. 6d. per lb., duty paid.

Chloroform.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

Creosote Carbonate.—6s. per lb.

Formaldehyde.—£40 per ton, in barrels ex wharf.

Guaiacol Carbonate.—7s. 6d. per lb.

Hexamine.—2s. 4d. to 2s. 6d. per lb.

Homatropine Hydrobromide.—30s. per oz.

Hydrastine Hydrochloride.—English make offered at 120s. per oz.

Hydrogen Peroxide (12 vols.).—1s. 8d. per gallon f.o.r. makers' works, naked.

Hydroquinone.—4s. 3d. per lb., in cwt. lots.

Hypophosphites.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

Iron Ammonium Citrate B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.

Magnesium Carbonate.—Light Commercial, £31 per ton net.

Magnesium Oxide.—Light Commercial, £67 10s. per ton, less 2½%, price reduced; Heavy Commercial, £23 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

Menthol.—A.B.R. recrystallised B.P., 22s. 6d. net per lb., Synthetic, 15s. to 17s. 6d. per lb., according to quality. English make.

Mercurials.—Red oxide, 5s. 5d. to 5s. 7d. per lb.; Corrosive sublimate, 3s. 9d. to 3s. 11d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 4s. to 4s. 2d. per lb.

Methyl Salicylate.—1s. 5d. to 1s. 7d. per lb.

Methyl Sulphonal.—16s. 6d. per lb.

Metol.—9s. per lb. British make.

Paraformaldehyde.—1s. 11d. for 100% powder.

Paraldehyde.—1s. 1d. to 1s. 4d. per lb.

Phenacetin.—4s. to 4s. 3d. per lb.

Phenazone.—6s. to 6s. 3d. per lb.

Phenolphthalein.—4s. to 4s. 3d. per lb.

Potassium Bitartrate 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots. Market very firm.

Potassium Citrate.—1s. 11d. to 2s. 2d. per lb.

Potassium Ferricyanide.—1s. 9d. per lb. in cwt. lots. Quiet.

Potassium Iodide.—16s. 8d. to 17s 2d. per lb., according to quantity.

Potassium Metabisulphite.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.

Potassium Permanganate.—B.P. crystals, 7½d. per lb., spot, slightly easier.

Quinine Sulphate.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.

Resorcin.—3s. 9d. per lb. In fair quantities.

Saccharin.—55s. per lb. Fair inquiry.

Salol.—3s. per lb.

Sodium Benzoate, B.P.—1s. 10d. to 2s. 2d. per lb.

Sodium Citrate, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d. per lb., according to quantity.

Sodium Ferrocyanide.—4d. per lb. carriage paid.

Sodium Hyposulphite, Photographic.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.

Sodium Nitroprusside.—16s. per lb.

Sodium Potassium Tartrate (Rochelle Salt).—75s. to 80s. per cwt., according to quantity.

Sodium Salicylate.—Powder, 1s. 9d. to 2s. 1d. per lb. Crystal, 1s. 10d. to 2s. 1d. per lb. Very heavy demand.

Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.

Sodium Sulphite, anhydrous, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

Sulphonal.—11s. 6d. per lb. Limited demand.

Tartar Emetic, B.P.—Crystal or Powder, 1s. 10d. to 1s. 11d. per lb.

Thymol.—12s. to 13s. 9d. per lb. Strong demand.

Perfumery Chemicals

Acetophenone.—9s. per lb.

Aubepine (ex Anethol).—9s. 6d. per lb.

Amyl Acetate.—3s. per lb.

Amyl Butyrate.—6s. 6d. per lb.

Amyl Salicylate.—3s. 3d. per lb.

Anethol (M.P. 21/22° C.).—6s. per lb.

Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 3d. per lb.

Benzyl Alcohol free from Chlorine.—2s. 3d. per lb.

Benzaldehyde free from Chlorine.—2s. 6d. per lb.

Benzyl Benzoate.—2s. 9d. per lb.

Cinnamic Aldehyde Natural.—17s. 6d. per lb.

Coumarin.—11s. 9d. per lb.

Citronellol.—15s. per lb.

Citral.—9s. per lb.

Ethyl Cinnamate.—9s. per lb.

Ethyl Phthalate.—3s. per lb.

Eugenol.—9s. 6d. per lb.

Geraniol (Palmarosa).—19s. 3d. per lb.

Geraniol.—7s. to 16s. per lb.

Heliotropine.—6s. per lb.

Iso Eugenol.—14s. per lb.

Linalol ex Bois de Rose.—16s. 9d. per lb.

Linalyl Acetate.—18s. per lb.

Methyl Anthranilate.—9s. 3d. per lb.

Methyl Benzoate.—5s. per lb.

Musk Ketone.—35s. per lb.

Musk Xylol.—8s. 6d. per lb.

Nerolin.—4s. per lb.

Phenyl Ethyl Acetate.—12s. per lb.

Phenyl Ethyl Alcohol.—9s. 6d. per lb.

Rhodinol.—28s. 6d. per lb.

Safrol.—1s. 8d. per lb.

Terpineol.—1s. 6d. per lb.

Vanillin.—21s. 6d. to 23s. 3d. per lb. Good demand.

Essential Oils

Almond Oil.—12s. 6d. per lb.

Anise Oil.—3s. 6d. per lb.

Bergamot Oil.—32s. 6d. per lb.

Bourbon Geranium Oil.—11s. 9d. per lb.

Camphor Oil.—60s. per cwt

Cinnamon Oil, Leaf.—5d. per oz.

Cassia Oil, 80/85%.—10s. per lb.

Citronella Oil.—Java, 85/90%, 3s. 4d. Ceylon, 2s. 4d. per lb.

Clove Oil.—7s. per lb.

Eucalyptus Oil, 70/75%.—1s. 10d. per lb.

Lavender Oil.—French 38/40%, Esters, 22s. 6d. per lb.

Lemon Oil.—10s. per lb.

Lemongrass Oil.—4s. 9d. per lb.

Orange Oil, Sweet.—13s. per lb.

Otto of Rose Oil.—Bulgarian, 65s. per oz. Anatolian, 35s. per oz.

Palma Rosa Oil.—12s. 3d. per lb.

Peppermint Oil.—Wayne County, 110s. per lb. Japanese, 13s. per lb.

Petitgrain Oil.—9s. per lb.

Sandal Wood Oil.—Mysore, 26s. per lb. Australian, 18s. 6d. per lb.

Methylated Spirit Prices

The Methylating Co., Ltd., of Kinnaird House, Pall Mall East, London, S.W.1, inform us that from Monday their prices, without engagement, are :—

In One Delivery.	Industrial Methylated Spirit.		Pyridinised Industrial Methylated Spirit.		Mineralised Methylated Spirit (Coloured Violet).	
	61 o.p.	64 o.p.	61 o.p.	64 o.p.	61 o.p.	64 o.p.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
500 galls. and upwards	2 11	3 0	3 1	3 2	—	—
100 „ and under 500	3 0	3 1	3 2	3 3	4 0	4 1
30 „ „ 100	3 2	3 3	3 4	3 5	4 2	4 3
10 „ „ 30	3 4	3 5	3 6	3 7	4 4	4 5

Methylated resin finish 2d. per gallon extra, methylated shellac finish 8d. per gallon extra over the prices quoted for pyridinised industrial methylated spirit.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd. and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, March 26, 1926.

A STEADY business is reported during the past week. There has been a fair up-take of chemicals, although the turnover is far below normal. Prices are firmly maintained.

Export trade is featureless.

General Chemicals

ACETONE is very firm at £81 10s. to £83 10s. per ton.
ACID ACETATE is in fair demand at £37 to £39 per ton for 80% technical and £38 to £40 per ton for 80% pure.
ACID FORMIC is in quiet demand, the 85% being quoted about £50 per ton.
ACID LACTIC price is unchanged at £43 10s. per ton, ex wharf.
ACID OXALIC is very quiet and the price is firm at 3¾d. per lb.
ACID TARTARIC remains featureless, the price being nominally 11½d. per lb.
ALUMINA SULPHATE price is firm at £5 15s. per ton, for 17-18%.
AMMONIUM CHLORIDE remains weak, being quoted at £18 per ton.
ARSENIC.—The market is lifeless at about £13 15s. to £14 per ton.
BARIUM CHLORIDE is quiet; the price is firm at £10 10s. per ton.
BARIUM CHLORIDE is unchanged.
EPSOM SALTS are in fair demand; price unchanged.
FORMALDEHYDE is very quiet at about £41 to £43 per ton.
IRON SULPHATE is unchanged.
LEAD ACETATE is firmer; white is £44 10s. per ton, and brown £43 10s. per ton.
METHYL ALCOHOL is weaker, at £45 to £46 per ton.
METHYL ACETONE is firm, and is quoted at £55 to £60 per ton, according to grade.
POTASSIUM CARBONATE and CAUSTIC are unchanged.
POTASSIUM CHLORATE is scarce—spot 4d. per lb., forward 3¾d. per lb.
POTASSIUM PERMANGANATE.—Demand is very quiet, the price being about 7d. per lb.
POTASSIUM PRUSSIATE is quiet at 7¼d. per lb.
SODA ACETATE is scarce in all positions, and commands 21s. to 23s per cwt.
SODA BICHROMATE is quiet; makers' prices are unchanged at 3½d. per lb., less 5%.
SODA CHLORATE is firm and very scarce, at 3d. to 3¼d. per lb.
SODA NITRITE is easier at £21 per ton.
SODA PHOSPHATE is unchanged.
SODA PRUSSIATE is rather firmer in tone, and an advance in price is anticipated.
SODA SULPHIDE is unchanged.

Coal Tar Products

There is little change to report in the market for coal tar products from last week.

90's BENZOL is quoted at 1s. 9½d. per gallon on rails, and is in good demand, the motor quality being quoted at the same price.
PURE BENZOL remains unchanged, and is quoted at 2s. 1d. to 2s. 2d. per gallon on rails.
CREOSOTE OIL is unchanged from last week, the price in the North being 5¾d. to 6d. per gallon on rails, while the price in London is from 6¾d. to 7d. per gallon on rails.
CRESYLIC ACID is quoted at from 1s. 10d. to 2s. per gallon on rails for the pale quality 97/99%, for export to America, while the dark quality, 95/97%, is quoted at 1s. 8d. to 1s. 9d. per gallon on rails. The home trade prices remain unchanged, at 1s. 6d. per gallon on rails for the pale quality, and 1s. 4d. per gallon on rails for the dark quality.
SOLVENT NAPHTHA remains steady at 1s. 5d. per gallon on rails.
HEAVY NAPHTHA is quoted at 1s. to 1s. 1d. per gallon on rails.
NAPHTHALENES are unchanged from last week, the lower grades being worth from £3 10s. to £4 5s. per ton; 76/78 quality about £6 per ton; and 74/76 quality about £5 to £5 10s. per ton.
PITCH remains steady and 87s. 6d. to 90s. is about the value f.o.b. U.K. ports. Business is slow and buyers are seemingly waiting for the market to drop.

Nitrogen Products Market

Export.—During the last week the market for sulphate of ammonia has been firm and considerable sales have been made by British and Continental producers on the basis or equivalent of £12 10s. per ton, f.o.b. U.K. port, in single bags. The demand has come chiefly from the Continent and the Far East. It seems likely that apart from small fluctuations this price will remain in force until end April.

Home.—Merchants in all parts of the country report very active demand for sulphate of ammonia. Producers in the south of England are practically all sold out for prompt delivery and sulphate is being railed from the Midlands and the North. Whether this portends an unusually heavy season or whether the demand has come earlier than usual cannot yet be stated. The prices for sulphate of ammonia remain unchanged.

Nitrate of Soda.—The nitrate market continues steady. The demand for consumption is steadily liquidating the stocks at continental ports. Cargo lots are now changing hands on the basis of £11 13s. per ton, c.i.f. chief European port.

Latest Oil Prices

LONDON.—LINSEED OIL steady, and occasionally 2s. 6d. advance. Spot, £31, ex mill; March, £29 10s.; April, £29 12s. 6d.; May-August, £29 17s. 6d.; September-December, £30 2s. 6d. RAPE OIL quiet. Crude, crushed, spot, £47 10s.; technical refined, £49 10s. COTTON OIL steady. Refined common edible, £42; Egyptian crude, £35 10s.; deodorised, £44. TURPENTINE quiet and unaltered. American, spot, 65s. 6d.; April, 65s. 9d.; May-June, 64s. 9d.; and July-December, 61s. 3d. per cwt.

HULL.—LINSEED OIL.—Naked spot, £30; March to May-August, £29 17s. 6d.; September-December, £30 2s. 6d. COTTON OIL.—Naked Bombay crude, £35; Egyptian crude, £35 10s.; edible refined, £39; technical, £38 10s. PALM KERNEL OIL.—Crushed naked, 5½%, £42 15s. GROUNDNUT OIL.—Crushed/extracted, £43 10s.; deodorised, £47 10s. SOYA OIL.—Extracted/crushed, £37; deodorised, £40 10s. RAPE OIL.—Crude/extracted, £47 10s.; refined, £49 10s. per ton, net cash terms, ex mill. CASTOR OIL and COD OIL unchanged.

BORAX is reported to have been produced from boracite in the experimental factory at the Leningrad Institute for Applied Chemistry.

A BOUNTY OF 4D. A GALLON on power alcohol is provided by a Bill passed by both Federal Houses of Parliament, according to a Melbourne report.

AN AUSTRIAN GLASS COMBINE with the participation of the Vitra concern of Prague is reported and it will handle the sales of all the company's products.

THE U.S. TARIFF RATES on tartaric acid and cream of tartar are to be officially investigated, and the Advisory Board recommends that a further survey be made in connection with linseed oil.

ON TUESDAY in the Chancery Division, Mr. Justice Eve had before him a petition to confirm a reduction of capital of the Amalgamated Photographic Manufacturers, Ltd., from over £900,000 to £423,000. The company had acquired certain patents in regard to colour photography and had sustained a loss in the matter of over £100,000. The Judge said that the company must continue " and reduced " for 2 months.

A WRIT, we learn, has been issued by Whyte Ridsdale and Co. on behalf of themselves and others against the Attorney-General in connection with the Board of Trade requirements under the Dyestuffs Act. At present artists' paints and colours and colour pencils are subject to licence as dyestuffs. The contention is that the Department has exceeded its powers and that paints, colours, copying-ink pencils, etc., are not dyes but dyed articles, which do not come under the Act. The date of the hearing has not yet been fixed.

IN THE LAMBETH COUNTY COURT, ON WEDNESDAY, before Judge Parry, Leslie Arthur Parr, 14, sued by his father of 6, Brooklands Road, S.W., to recover £25 damages from Mr. George Wilkins, science master at the Vauxhall Central School, South Lambeth Road; and the L.C.C. to recover damages through being severely burned by nitric acid in the laboratory of the school. Negligence was alleged, which was denied. Mr. Wilkins said that he asked for a boy to pour out some acid, and Parr came forward. It was quite a usual thing for a boy to do. Judge Parry said that he considered it gross negligence on the part of the Education Authorities to allow a boy of that age, and with such a small hand, to pick up such a large bottle. There would have to be judgment for the plaintiff for the amount claimed, £25, against both defendants. Judgment was entered accordingly, with costs.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, March 26, 1926.

DURING the past week business in the Heavy Chemical Market has been rather quieter, inquiry in most instances being for smaller quantities. Prices on the whole remain on the same level as last reported.

Industrial Chemicals

ACID ACETIC.—98/100% quoted £55 to £67 per ton according to quantity and packing c.i.f. U.K. port; 80% pure, £40 to £41 per ton; 80% technical, £38 to £39 per ton, packed in casks c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated, or small flakes, £37 per ton; powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In moderate demand. Now quoted 5¼d. per lb. delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Now offered at 1s. 3¼d. per lb. less 5% ex wharf, but this price could probably be shaded.

ACID FORMIC 85%.—Spot material quoted about £49 15s. per ton ex store. Offered from the Continent at about £49 per ton ex wharf, prompt shipment.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy ex works.

ACID NITRIC 80°.—Remains unchanged at £23 5s. per ton ex station, full truck loads.

ACID OXALIC 98/100%.—Offered from the Continent at 3¾d. per lb. c.i.f. U.K. ports. Spot material quoted 3¾d. per lb. ex store.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 11¼d. per lb. less 5% ex wharf, early delivery.

ALUMINA SULPHATE 17/18%, IRON FREE.—Some cheap offers to hand from the Continent. Quoted £5 9s. per ton c.i.f. U.K. ports. Spot material available at about £6 5s. per ton ex store.

ALUM, LUMP POTASH.—Unchanged at about £7 12s. 6d. per ton c.i.f. U.K. ports, spot material quoted £9 per ton ex store. Powdered quality 5s. per ton less; powdered quality offered from the Continent at about £7 7s. 6d. per ton c.i.f. U.K. ports.

AMMONIA ANHYDROUS.—Imported material now offered at 1s. per lb. ex wharf. Containers extra and returnable. Even lower prices quoted for large quantities.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks delivered or f.o.b. U.K. ports. Industrial quality about £10 per ton less.

AMMONIA LIQUID 880.—Unchanged at about 2½d. to 3d. per lb. delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £25 to £26 per ton ex station. On offer from the Continent at about £22 per ton c.i.f. U.K. ports. Fine white crystals offered from the Continent at about £18 12s. 6d. per ton c.i.f. U.K. ports.

ARSENIC.—Spot material still available at £17 per ton ex store. Offered for prompt despatch from works at about £16 15s. per ton ex wharf.

BARIUM CHLORIDE 98/100%.—Rather easier; now on offer from the Continent at about £9 12s. 6d. per ton c.i.f. U.K. ports.

BLEACHING POWDER.—English material quoted £9 10s. per ton ex station. Contracts 20s. per ton less. On offer from the Continent at about £7 10s. per ton c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton ex works. Continental quoted £5 per ton c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton, carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton carriage paid U.K. station. Continental quality £4 17s. 6d. per ton c.i.f. U.K. ports.

COPPERAS, GREEN.—Quoted £3 17s. 6d. per ton f.o.b. U.K. ports for export. About £3 10s. per ton f.o.r. works for home consumption.

COPPER SULPHATE, 99/100%.—Price for British material, £23 10s. per ton f.o.b. U.K. ports. Moderate inquiry for export. Continental on offer at about £22 per ton ex wharf.

FORMALDEHYDE 40%.—Quoted £37 per ton c.i.f. U.K. ports. Prompt shipment. Spot material available at about £38 per ton ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton ex store or station. Continental on offer at about £3 per ton c.i.f. U.K. ports.

LEAD, RED.—Quoted £39 5s. per ton c.i.f. U.K. ports, early shipment. Spot material quoted £40 per ton ex store.

LEAD, WHITE.—Offered on spot at about £40 10s. per ton ex store. Quoted £39 per ton c.i.f. U.K. ports, to come forward.

LEAD ACETATE.—White crystals on offer from the Continent at about £42 10s. per ton c.i.f. U.K. ports. Brown quoted about £38 5s. per ton c.i.f. U.K. ports. Spot material available at about £44 per ton ex store for white quality.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton ex station in moderate demand.

POTASH CAUSTIC 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton c.i.f. U.K. ports, according to quantity and destination. Spot material available at about £29 per ton ex store.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb. delivered.

POTASSIUM CARBONATE 96/98%.—Offered from the Continent at about £25 5s. per ton ex wharf, prompt shipment. Spot material available at about £26 10s. per ton ex store. 90/94% quality quoted £22 15s. per ton c.i.f. U.K. ports.

POTASSIUM CHLORATE 98/100% CRYSTALS.—Offered from the Continent at about £30 5s. per ton c.i.f. U.K. ports. Spot material available at £31 10s. per ton ex store. Powdered quality quoted £28 5s. per ton c.i.f. U.K. ports, prompt shipment.

POTASSIUM NITRATE, SALTPETRE.—Quoted £22 15s. per ton c.i.f. U.K. ports, prompt shipment. Spot material available at about £25 10s. per ton ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Spot material quoted 8d. per lb. ex store. Offered for early delivery at 7½d. per lb. ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—In moderate demand. Spot material quoted 7¼d. per lb., ex store, but could probably be obtained for less. On offer for prompt shipment from the Continent at 7d. per lb., c.i.f. U.K. port.

SODA CAUSTIC.—76/77% £17 10s. per ton; 70/72%, £16 2s. 6d. per ton; broken 60%, £16 12s. 6d. per ton; powdered 98/99%, £20 17s. 6d. per ton, all carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—Offered on spot at £21 10s. per ton ex store, but very limited supplies. Quoted £20 15s. per ton, c.i.f. U.K. ports to come forward.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station; M.W. quality, 30s. per ton.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb. delivered.

SODIUM CARBONATE.—Soda crystals £5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more; alkali 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton, ex station. Minimum 4-ton lots. Pea crystals, £14 5s. per ton, ex station. Continental commercial quality offered £9 per ton, ex store.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96/98% refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE 100%.—Quoted £24 per ton, ex store; offered from the Continent at about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—In steady demand and spot material now quoted about 4¼d. per lb., ex store. Offered for prompt shipment from the Continent at about 4d. per lb., c.i.f. U.K. port.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—60/62% solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyers' works U.K. minimum 5-ton lots with slight reduction for contracts. 60/62% solid quantity offered from the Continent at about £10 per ton, c.i.f. U.K. ports; broken, £1 per ton more; crystals, 30/32%, £7 per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 5s. per ton; roll, £10 per ton; rock, £10 per ton; ground, £9 15s. per ton, ex store, spot delivery, prices nominal.

ZINC CHLORIDE.—British material, 96/98%, quoted £23 15s. per ton, f.o.b. U.K. port. 98/100% solid on offer from the Continent at about £21 15s. per ton c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental manufacture on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Some home inquiries.

ORTHO TOLUIDINE.—9d. per lb. Fair home inquiries.

BETA NAPHTHOL.—11d. per lb. Some home inquiries.

BETA NAPHTHYLAMINE.—3s. 3d. per lb. Some home inquiries.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, March 26, 1926.

Chemical traders on the Manchester market this week have experienced no perceptible improvement in the volume of their business and on all sides one hears anything but cheerful accounts of the present position and the prospects for the immediate future. Buying for forward delivery continues on a limited scale and most of the current business passing is to fill prompt or comparatively early needs. Thus the home trade position is essentially what it has been for some time. The demand for chemicals for shipment is also restricted.

Heavy Chemicals

Inquiry for hyposulphite of soda is slow just now, but prices seem to be fairly steady, photographic quality selling at about £14 5s. per ton and commercial at £9 10s. Acetate of soda continues to hold a strong position as regards price and £21 to £21 10s. per ton is still about the range. Chlorate of soda has been offered here at 3⅛d. to 3¼d. per lb., but the demand is only moderate. Sulphide of sodium is rather easy and not very much business has been reported this week; crystals are quoted at about £9 12s. 6d. per ton and 60-65 per cent. concentrated solid at £11 5s. Phosphate of soda is quiet but continues to be offered at £12 10s. to £12 15s. per ton. The demand for caustic soda is at much the same level as for some time and there has been no change in prices, these ranging from £15 2s. 6d. per ton for 60 per cent. to £17 10s. for 76-77 per cent. Glauber salts are quiet at £3 5s. to £3 10s. per ton. Saltcake is also a slow section at round £3 per ton. Soda crystals continue to be quoted at £5 5s. per ton, and inquiry for this is of a quietly steady character. Bleaching powder is in moderate demand at £8 10s. per ton. Bicarbonate of soda is unchanged at £10 10s. per ton but business has been inactive. Bichromate of soda is still on offer at 3¼d. per lb. Alkali is steady and in fairly good inquiry at £6 15s. per ton.

Among the potash products, carbonate keeps steady and meets with a fair amount of inquiry at £26 10s. per ton for the 96 per cent. material. Caustic potash is in quiet demand, but at £27 5s. to £27 10s. for 90 per cent. strength there has been little change in the general level of prices. Permanganate of potash continues to sell slowly and values are easy, commercial being about 5¼d. per lb. and B.P. at round 7d. per lb. Yellow prussiate of potash is rather quiet just now at 7d. to 7¼d. per lb. Bichromate of potash is steady and in moderate request at about 4¼d. per lb. Chlorate of potash shows little or no change in position or value, the price still being about 4d. per lb.

Arsenic keeps quiet at round £14 per ton on rails for white powdered, Cornish makes. Sulphate of copper is fairly steady at about £24 5s. per ton, but the demand for this continues rather slow. Acetate of lime is selling slowly and the grey material is easier at £16 15s. per ton, although brown is fairly steady at £8 to £8 5s. Acetate of lead is quiet but prices are maintained at £43 10s. per ton for white and round £40 for brown. Nitrate of lead is still being offered at £40 to £41 per ton. Commercial Epsom salts are quiet and easy at £3 15s.; magnesium sulphate, pharmaceutical quality, is quoted at about £4 7s. 6d. per ton.

Acids and Tar Products

In the absence of important business oxalic acid seems to be rather easier again at 3½d. to 3¾d. per lb. Tartaric acid is nominally unchanged at 11¼d. per lb., but inquiry is slow. Citric acid is selling in small quantities at about 1s. 3¼d. per lb. For acetic acid the demand is on moderate lines at £37 per ton for 80 per cent. commercial and £67 for glacial.

Carbolic acid continues very quiet at 5d. to 5¼d. per lb. for crystals and round 1s. 4½d. per gallon for crude. Creosote oil is in moderate request at about 6d. per gallon. Pitch is quieter than it has been recently but prices are steady here at 77s. 6d. per ton, f.a.s. Solvent naphtha is rather slow at round 1s. 6½d. per gallon.

Electrical Resistance Furnaces

A lecture on electrical resistance furnaces was delivered before the Northern Polytechnic Chemical Association by Mr. W. B. Clements on March 16. The lecturer pointed out that electrical resistance furnaces were finding increased use scientifically and industrially, since they were economical, gave rise to no fumes or gases, and allowed of ease and precision of temperature control. Moreover, the small loss of heat did not cause undue rise of temperature in the neighbourhood. In the first form of resistance furnace, made by Heraeus in 1902, platinum was used as the heating element. This had certain disadvantages, and in 1907 nickel-chromium (nichrome) was introduced, and was now the only alloy in use for the purpose. The best composition was 80 per cent. nickel and 20 per cent. chromium, which could be run at 1100° C. for long periods. For higher temperatures a furnace to fulfil the requirements of general research and laboratory work was not yet available. Furnaces had been made using molybdenum and tungsten, which melted at 2550° C. and 3200° C. respectively, but as they oxidised in air they had to be used in a hydrogen atmosphere, which was a drawback. Carbon was also used as resistance material, but though it withstood high temperatures, it oxidised rapidly in air above 600° C. Special provision had to be made to prevent oxidation, and also to permit the ready renewal of the carbon resistor. Recently, rods of silit (a form of silicon carbide) had been used more successfully than ordinary carbon or graphite rods. Electrical furnaces were used for a great variety of scientific and industrial purposes, for example, steel hardening, heat treatment of small steel articles, annealing of metals, chemical combustion, checking of thermocouples and resistance thermometers, etc.

Salt Union Meeting

Mr. G. H. Cox, chairman, presided at the general meeting of the Salt Union, Ltd., at Liverpool, on Tuesday. He said that they had in course of erection a large warehouse at Weston Point, for the better handling of the output of their vacuum plant there; and a drier had been installed. For the present ample supplies of dried vacuum salt were produced at Winsford, but it was prudent to be ready at this centre for the growth of that section of their business. Their plant, which transformed the waste sludge from the Winsford vacuum purification plant into valuable products—viz., carbonate of magnesia and lime—had been completed, and he was glad to be able to congratulate the scientific department on the result.

The Indian salt tax was to remain unaltered, and there were disquieting rumours of extensions of production at the Red Sea. The outlook in Japan was hopeful, but prices might have to be reduced to meet competition.

With regard to home trade, the Salt Manufacturers' Association had lately taken active steps to counteract the effect of the excessive production due to the operations of newcomers in the trade. British manufacturers had had to contend with an import of 64,619 tons of solar and German salt, which, although less than last year by about 3,000 tons, had a disastrous effect on prices of their fishery salt. Fishcurers were, for the coming season, showing less inclination to use solar salt because they found that this article, made from sea water, contained a germ which affected the fish cured with it, causing the disease called "pink." Their research chemists had continued to investigate the matter and had given the benefit of their conclusions freely to the fishcurers and to the tanners, for solar salt had also a deleterious effect on hides.

U.S. Sulphur Production in 1925

The production of sulphur in 1925 amounted to 1,409,240 long tons compared with 1,220,561 tons in 1924, according to the U.S. Bureau of Mines. Exports of sulphur or brimstone in 1925 were the largest ever recorded, being 629,401 long tons, compared with 482,114 tons in 1924, and were 30 per cent. higher than those of 1922, the previous year of highest record. Of the exports in 1925 Germany received 136,972 tons; Canada, 125,681 tons; France, 110,684 tons; and Australia, 71,530 tons. Exports of refined, sublimed and flowers of sulphur totalled 6,381,791 lb., of which Canada and Mexico received the major portion. As usual, the imports of sulphur were negligible.

Company News

RIO TINTO CO.—A final dividend of 35s. per share for 1925 is recommended by the directors.

UNITED DRUG CO.—A quarterly dividend of $2 per share has been declared, payable on June 1.

BURT, BOULTON AND HAYWOOD.—An interim dividend of 1s. per share is announced on the ordinary shares.

TARMAC, LTD.—A final dividend of 1s. 6d. per share, free of tax, is proposed on the ordinary shares, making, with the interim dividend, a total of 2s. per share, free of tax, for the year. The date of the annual general meeting is April 1.

CELLULOSE HOLDINGS AND INVESTMENT CO., LTD.—It is announced that the company is prepared to receive tenders for its holding of 750,000 7½ per cent. cumulative participating preference shares of £1 each, fully paid, of the British Celanese Company.

THARSIS SULPHUR AND COPPER CO.—Having regard to the present conditions of trade and the uncertainty of the immediate future, the directors have decided not to recommend any dividend for the year 1925. A sum of £19,382 is written off properties and £121,988 carried forward.

BROKEN HILL PROPRIETARY BLOCK 14.—A dividend of 2s. 3·6d. per share is announced on the preference shares, of which 1s. 9·6d. is accrued interest at the rate of 10 per cent. per annum from April 1, 1923, to March 31, 1926, and a dividend of 6d. per share on the ordianry shares.

INTERNATIONAL NICKEL CO.—For the nine months ended December 31 last the net profits were $4,237,400. Dividends on the preference shares absorbed $401,067, and on the common shares $1,673,384, leaving a surplus of $2,162,949, and increasing the unappropriated profits to $15,302,092.

R. WHITE AND SONS.—The net profit for the year ended November 30 last was £81,733 against £42,859 for the previous year, and the balance brought forward was £59,266. A dividend of 15 per cent. and a bonus of 10 per cent. are proposed on the ordinary shares, adding £20,000 to the contingencies fund and carrying forward £17,600.

JURGENS, LTD.—The results for the year 1925, after making adequate reserves for depreciation and providing for all contingencies, show a net profit of £302,702, and the balance brought in of £106,168 makes a total of £408,870. After providing for preference dividends, it is proposed to pay a dividend of 5 per cent, free of tax, on the ordinary shares, carrying forward to next year's accounts a balance of £108,870.

BELL'S UNITED ASBESTOS CO., LTD.—The directors have resolved to recommend to the shareholders at the annual general meeting to be held on April 22 the payment of a balance dividend of 2s. per share on the ordinary shares of the company, which, with the interim dividend paid in October last, makes a total distribution of 12½ per cent. for the year; that £2,000 be placed to staff pensions fund; that £8,000 be placed to reserve, increasing that fund to £201,498; and that £34,962 be carried forward.

BRITISH OIL AND CAKE MILLS, LTD.—For the year 1925 the directors' report states that the balance at credit of profit and loss account is £488,421, which, with the amount brought forward, makes an available sum of £520,058. The directors recommend the payment of the preference share dividend, which will require £40,870, the payment of a preferred ordinary share dividend of 12½ per cent. (less tax), absorbing £358,068, and of an ordinary share dividend of 2½ per cent. (less income tax), absorbing £87,500, leaving to carry forward to next account £33,619.

AMERICAN CELLULOSE AND CHEMICAL MANUFACTURING CO.—The report for 1925 shows a net profit of $305,360, representing operations for the past half-year. Out of this $200,000 has been set aside for special depreciation reserve, and further amounts for "interest on bonds applicable to operations" and for doubtful accounts have been similarly dealt with, the balance being carried forward. During the year the preferred capital has been increased to $7,050,400 and the common shares of no par value have been increased from 200,000 to 206,050.

NIGER CO.—After allowing for all losses made by subsidiary companies, the trading profit for the year ended June 30, 1925, amounted to £681,519. Against this profit has been charged £86,965 in respect of the cost incurred in replacing £2,500,000 8 per cent. seven-year notes and £175,000 5 per cent. debenture stock by £4,000,000 5½ per cent. guaranteed debenture stock. and £238,616 has been provided in respect of interest on notes and debenture stock. After the transfer of £93,438 to depreciation and insurance reserve accounts there remains a balance of profit of £262,499. This has reduced the debit balance on profit and loss account brought forward from the previous year to £1,023,250, which remaining loss has been met by an allowance made by Lever Brothers, who hold over 98 per cent. of the ordinary share capital of the company.

ENGLISH MARGARINE WORKS, LTD.—The report for the year ended December 31 last shows a net profit for the period of £121,308, to which is added the credit balance brought forward of £17,415, making a total of £138,723. From this has to be deducted reserve for depreciation on buildings and plant £20,000, amounts written off motors and motor wagons £3,911, reserve for income tax, including 1925–6 assessment, £10,000, and preference dividend paid September 29, 1925, less income tax, twelve months to December, 1923, £27,781, leaving a balance from which the directors recommend payment of two years' preference dividend at 7 per cent. for the period to December 31, 1925, less income tax, £55,562, leaving £21,468. It is also recommended £2,500 be paid as directors' fees, leaving a balance to carry forward to next year's account of £18,968.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

TAR.—Tenders are invited for the supply of 40,000 gallons of tar for Rochford R.D.C. Details from Mr. A. C. Madge, Rayleigh, Essex. Tenders returnable by April 7.

CHEMICALS.—Tenders are invited for the supply of alumina ferric, 16 cwt.; bleaching powder, 6 cwt.; hydrated lime, 10 cwt. for Macclesfield. Details from Town Clerk. Tenders returnable by April 12.

SOAP VARNISHES, RED OXIDE PAINT.—The South African Railways and Harbour Administration invited tenders for red oxide paint in paste (Reference B.X. 2430); varnishes and enamels (Reference B.X. 2427); soap (Reference B.X. 2423).

PITCH, PHARMACEUTICALS.—Agents in Madrid wish to represent British manufacturers of pitch for briquettes, pharmaceuticals, and drugs. (Reference 376).

CAUSTIC POTASH.—Agents in Stockholm wish to represent a British merchant of zinc and Strait tin and a British exporter of caustic potash. (Reference 378).

Dyestuff Protection Criticised

MR. HENRY W. CHRISTIE, chairman of the United Turkey Red Co., presiding at the annual meeting of shareholders in Glasgow last week, said that cotton was still the best fabric at a price, and no one believed that artificial silk would supplant cotton as the basis constituent of fabrics. The company were alive to the possibilities of artificial silk combinations in fabrics. On the question of dyestuffs, Mr. Christie said it was not wise of the Government to protect artificially any industry to the extent it had done in the case of dyemaking. The cost of the principal dyestuffs in Britain was about twice the cost on the Continent or in India, and one was puzzled to discover how the Government expected the textile industry to support such a burden. The company were shareholders in both the large dye-producing concerns, and subscribed to them to develop them for the benefit of the textile industries, but these holdings did not blind them to the fact that dyemaking companies must face the position from the economic point of view, and that if the Government persisted in the extravagant protection granted, it would mean not only the ruin of the dye industry, but would seriously affect the textile industry as well. What the nation wanted was less interference with industry.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

BROWNS (a firm), 35, Oldham Road, Royton, dry cleaners and dyers. (C.C., 27/3/26.) £17 11s. 3d. February 11.

HUTCHINSON, William L., Corporation Street Chambers, Bolton, manufacturing chemist. (C.C., 27/3/26.) £16 15s. 2d. February 5.

TANKO, LTD., Hanover Works, Hanover Street, Islington, polish manufacturers. (C.C., 27/3/26.) £17 10s. 2d. November 10.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

INTERNATIONAL PULP AND CHEMICAL CO., LTD., London, W.C. (M., 27/3/26.) Registered March 9, mortgage to bank, charged on unpaid capital of 19s. per share in respect of £1,000,000 shares.

MORNY FRERES, LTD., London, W., chemists and perfumers. (M., 27/3/26.) Registered March 10, mortgage to bank, charged on 199 and 201, Regent Street, and 66, Conduit Street, W. *Nil. July 10, 1924.

London Gazette, &c.

Application for Discharge

BOWEN, Evan Morgan, Penhydd, Blundell Avenue, Porthcawl, Glamorgan, chemical engineer. (A.F.D., 27/3/26.) Hearing, April 27, 10.30 a.m., County Court, Wyndham Street, Bridgend.

Order Made on Application for Discharge

PAYNE, Ernest Edward Munro, Red House, Narborough, Leicester, analytical chemist. (O.M.A.D., 27/3/26.) Date of Order, February 11. Discharge suspended until a dividend of not less than 10s. in the £ has been paid to the creditors.

Business Names Registered

[The following (trading name and address, nature of business, date of commencement, and proprietors' names and addresses) have been registered under the Registration of Business Names Act.]

THE AKWIK MANUFACTURING CO., 30, Charles Street, Glasgow East, drysalters. February 20, 1926. Miss Jessie Withers Queen, 53, Cumberland Street, Glasgow East.

THE BALSALL HEATH DISINFECTANT CO., 109, Mary Street, Balsall Heath, Birmingham. February 15, 1926. Mr. Frederick H. Moore, 109, Mary Street, Balsall Heath.

THE JAKDOR MANUFACTURING CO., 10, Seedley Terrace, Pendleton, manufacture of chemical commodities. March 1, 1926. Mr. John Walmsley Kenyon (same address).

New Companies Registered

BAKELITE CORPORATION OF GREAT BRITAIN, LTD., Victoria Station House, Victoria Street, London, S.W.1. Registered March 18, 1926. Manufacturers of and dealers in organic and inorganic chemical substances and products natural or synthetic plasters and plastic substances and phenolic condensation products, etc. Nominal capital, £100 in £1 shares.

BITUMEN EMULSIONS, LTD., Norway House, 21/24, Cockspur Street, London, S.W.1. Registered March 19, 1926. Manufacturing chemists, etc. Nominal capital, £100 in £1 shares.

WHEY PRODUCTS, LTD. Registered March 17, 1926. Manufacturers, importers and exporters of and dealers in whey and products of all kinds, by any process from or by the treatment of whey or milk. Nominal capital, £20,000 in £1 shares (19,000 ordinary and 1,000 deferred). A director: Sir William J. Pope, Holmesdale, The Avenue, Cambridge.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following trade marks can be lodged up to April 17, 1926.

"TECTAL."

466,373. Wood preservatives. Class 1. The Mond Tar By-products Syndicate, Ltd., 47, Victoria Street, London, S.W.1; manufacturers. January 22, 1926.

"NEO-CULTOL."

466,931. Chemical substances prepared for use in medicine and pharmacy. Class 3. The Arlington Chemical Company (a corporation organised and existing under the laws of the State of New York, United States of America), South Broadway, corner of Vark Street, Yonkers, County of Westchester, State of New York, United States of America; manufacturing chemists. February 8, 1926.

"HUMAZONE."

465,757. Manures and fertilisers. Class 2. Walmsley and Barlow, Willow Mill, Hanover Street, Bolton, Lancashire; manufacturers. January 1, 1926.

"HALARSINE."

465,411. Chemical substances for use in medicine and pharmacy. Class 3. May and Baker, Ltd, Garden Wharf, Church Road, Battersea, London, S.W.11; manufacturing chemists. December 18, 1925. (To be Associated. Sect. 24.)

"PLASMOCHIN."

466,698. Chemical substances prepared for use in medicine and pharmacy. Class 3. Bayer Products, Ltd., 31 to 34, Basinghall Street, London, E.C.2; merchants and manufacturers. February 2, 1926.

"COMPRAL."

466,699. Chemical substances prepared for use in medicine and pharmacy. Class 3. Bayer Products, Ltd., 31 to 34, Basinghall Street, London, E.C.2; merchants and manufacturers. February 2, 1926.

Power Alcohol from Straw

ACCORDING to the Adelaide correspondent of *The Times*, Dr. W. A. Hargreaves, the Government Director of Chemistry, giving evidence before the Royal Commission which is investigating the development of secondary industries, emphasised the great possibilities of manufacturing power alcohol from straw. In a departmental test one ton had yielded 50 gallons, but a much higher return was likely if a company were formed to establish the industry on a permanent commercial basis. Enough straw was wasted in South Australia for the manufacture of sufficient alcohol to take the place of all the petrol it imported. It was estimated that considerably over half a million tons of straw was available every season within a 100-miles radius of Adelaide. South Australia was also more favourably situated than any other State for the establishment of a paper pulp industry using straw.